Smithsonian

April 1985

Reflecting pool cupped in bromeliad's center is one of the plant world's leafy spectacles (p. 150)

Photographed at Biltmore House, Asheville, NC.

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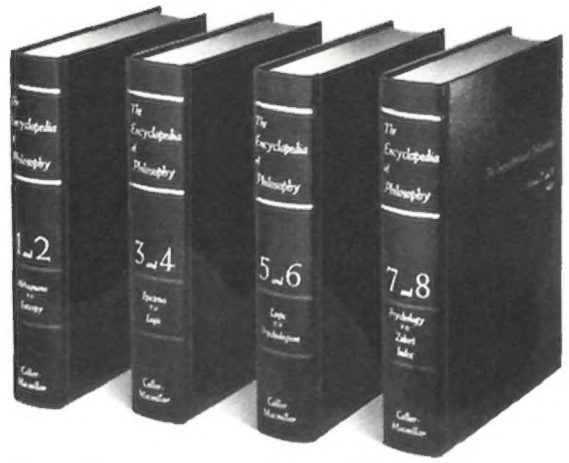

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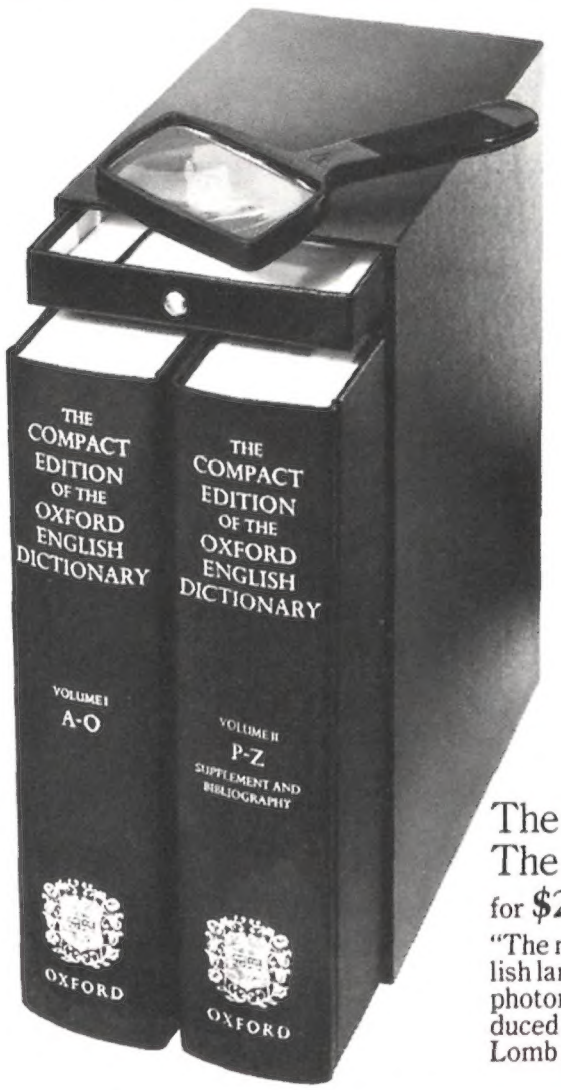

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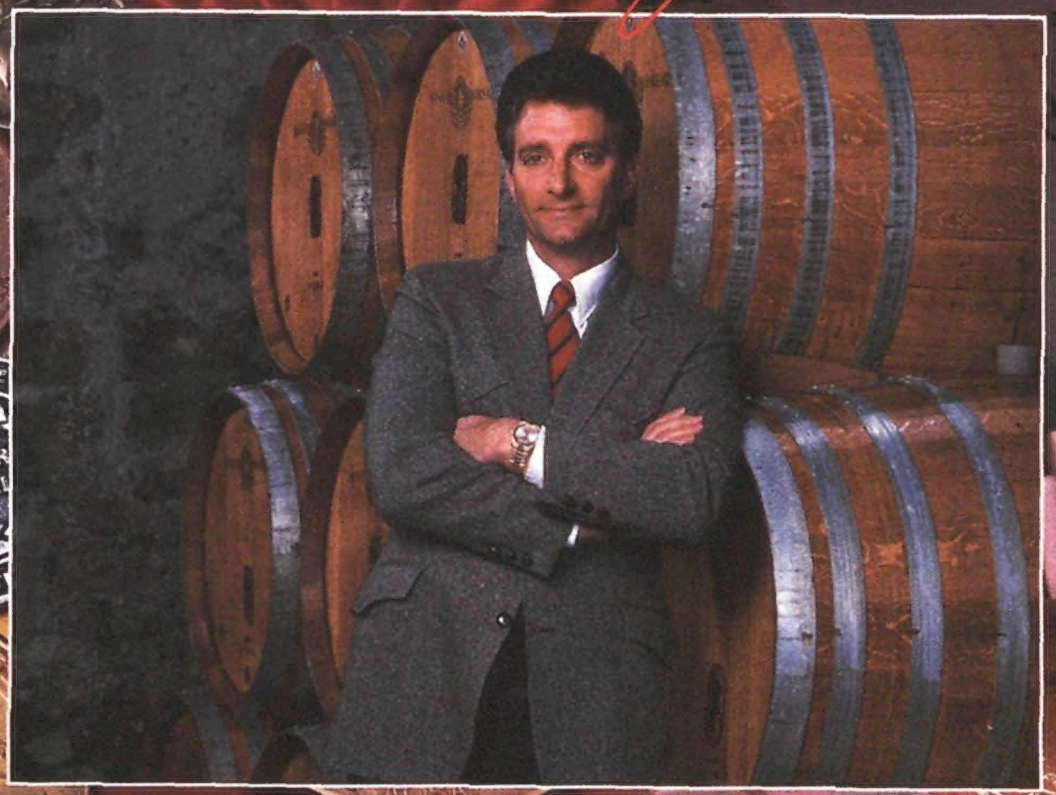

April 1985

Smithsonian

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Smithsonian (ISSN 0037-7333) is published monthly
by the Smithsonian Associates, 900 Jefferson Drive, Washington, DC 20560.
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Subscription price $18 a year in U.S. possessions, $30 elsewhere.
80 percent of dues is designated for magazine subscription.
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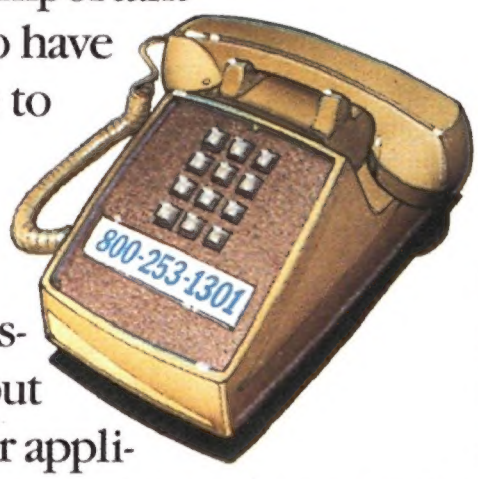

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The interior is as advanced as the exterior.

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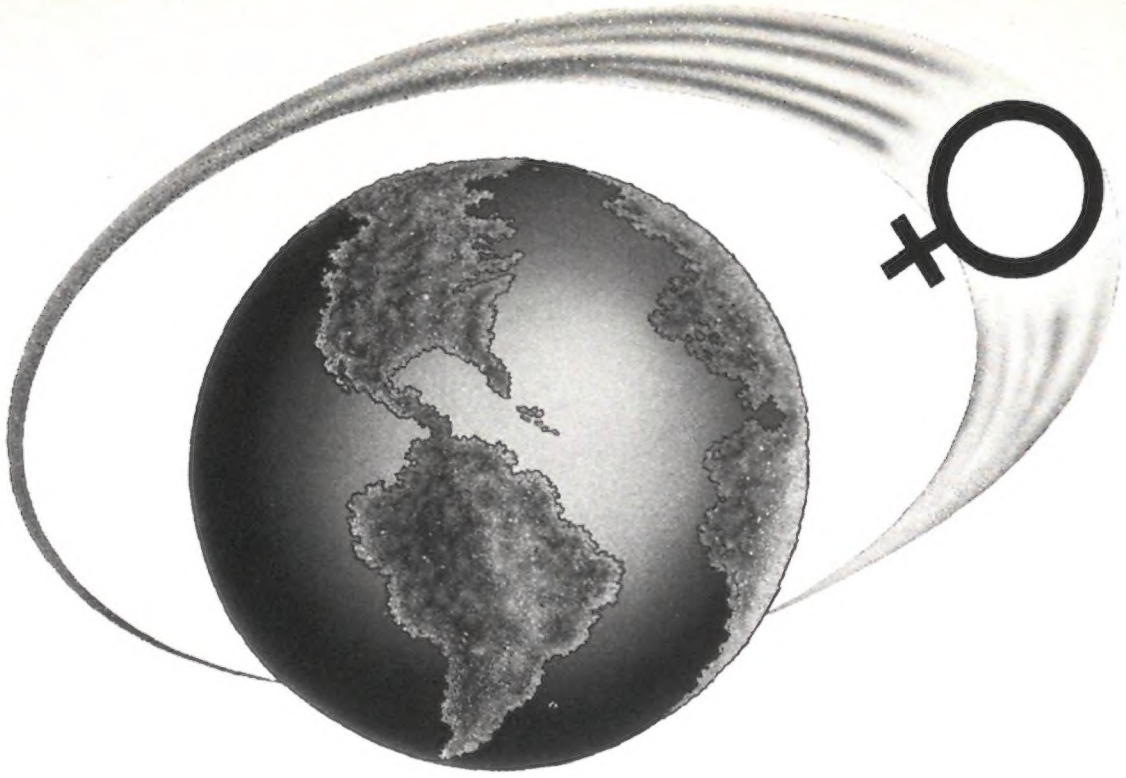

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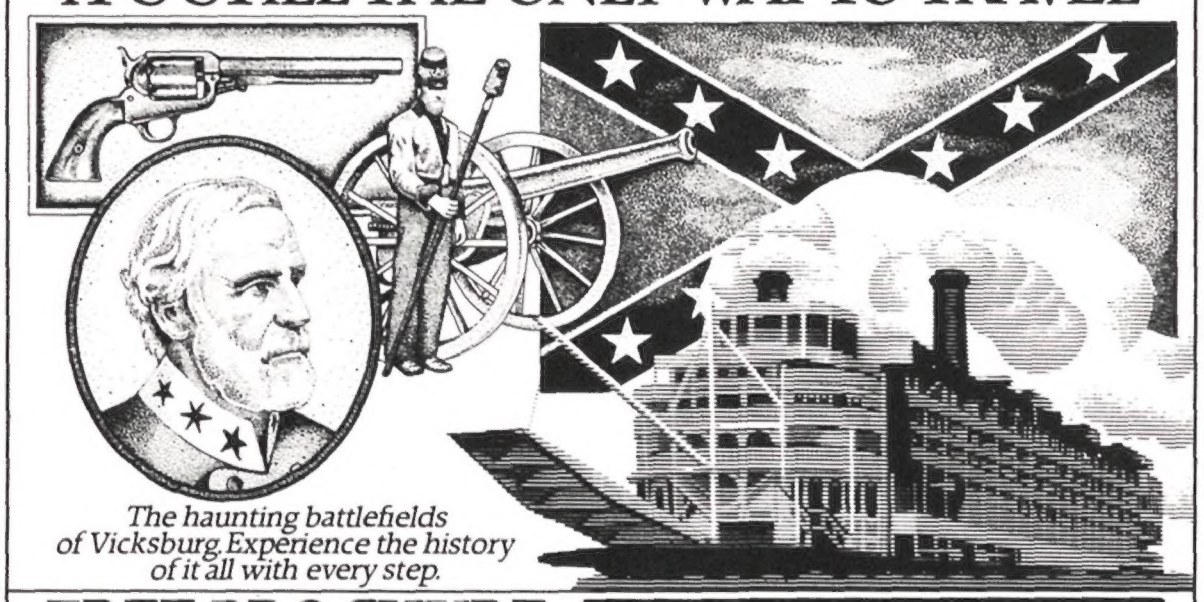

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Secretary Adams' comments

Smithsonian horizons

In the future, further additions to our museum collections will call for direction and restraint

What considerations, if any, restrict the scale or breadth of focus of the Smithsonian's collecting policies? Isn't it plausible that our appetite for further acquisitions should be, at least in principle, a healthy one? Doesn't our unequaled—and still growing—array of museums provide some physical mandate for an expansive interpretation of the "gaps" we want to fill? Similarly, doesn't our widespread reputation (not, I believe, appropriate or deserved) for being the "nation's attic" lend some further sanction to a voracious eclecticism of diet?

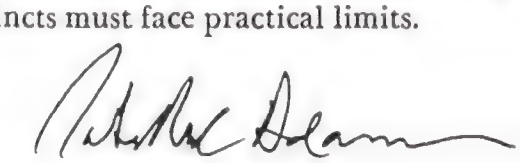
An old and respected friend of the Smithsonian has for some time been enlivening our conversations with variants of these questions. He is an inveterate collector, among whose interests and holdings are many antiquities and examples of contemporary folk art from the world regions in which he has worked and traveled. Our collections, he rightly observes, include very little of this material. As I noted in this column last month, such material is subject to pervasive, rapid and generally destructive change. Doesn't an obligation follow to mount a major acquisitions program, while the opportunities for gifts from original collectors are still relatively open?

We probably should, in some areas. As a general course of action, however, there are other factors to be considered. First, this particular attic really is getting crowded. If our collections are allowed to grow unchecked, they will be progressively exposed to physical deterioration as a result of overcrowding. They will also exceed our staff's already overstrained capacity to catalog them and to apply needed conservation measures. To the 100 million or so objects already on our registers we are adding about three million a year, largely as a result of our own research activities. This brings us very close to the limit with which we are currently able to cope.

Secondly, visitors properly expect to find objects in Smithsonian collections better catalogued, better cared for and more easily accessible. To bring additional collections to this condition requires a prodigious investment of curatorial time and other resources. The exhibition and research possibilities associated with major, diversified collections are almost infinitely wider than those that small, specialized ones make possible. But only with greatly improved networks of internal management and communication can most of the possibilities be brought to fruition. Unless carefully directed and restrained, therefore, growth in the size of our collections threatens to make us correspondingly less effective at using and making available what we now have.

Third, we are not alone. A recent report of the American Association of Museums ("Museums for a New Century," 1984) notes that "In a world of diminishing resources, collaboration among museums and between museums and other organizations will be increasingly obligatory." Only in aggregate can museum collections ever "represent the whole diversity of the world's cultural, scientific and natural heritage." We must play our part in maximizing this aggregate, adding to our own holdings where appropriate but avoiding wasteful or destructive competition with our sister institutions.

I trust this will not be taken as a disclaimer of interest in hearing from readers who may think of the Smithsonian as the best, and in many cases the only, repository for additions to the national heritage. As the report continues, "a certain amount of growth is necessary to ensure quality; a static collection is not likely to be excellent in esthetic, scientific or intellectual terms." We want, and with an enthusiasm that in many cases approaches passion, those individual objects and collections that "belong here"—that deepen and amplify what the Smithsonian has and does, building responsibly on foundations already in place. We also remain alert to selected opportunities to create entirely new foundations, as was done in accepting the Hirshhorn, the African and the Sackler collections. But you should not be surprised or disappointed if you find that our collecting instincts must face practical limits.



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ENGINE	2.3L OHC 4-cylinder Fuel-injected Turbocharged	1.8L OHC 4-cylinder Fuel-injected	2.0L DOHC 4-cyl. 16 Valve Fuel-injected Turbocharged Intercooled	2.2L OHC 5-cylinder Fuel-injected	2.1L OHC 4-cylinder Fuel-injected Turbocharged Intercooled
TRANSMISSION	5-speed manual 3-speed auto	5-speed manual 4-speed auto	5-speed manual 3-speed auto	5-speed manual auto N/A	4-speed manual + Overdrive
HORSEPOWER (SAE net @ rpm)	175/5000	101/5800	160/5500	115/5500	162/5
TORQUE (ft-lbs @ rpm)	200/3000	103/4500	188/3000	126/3000	175/3900
SUSPENSION, front & rear	MacPherson strut/ Independent semi-trailing arms	MacPherson strut/ Independent semi-trailing arms	Transverse A-Arms/ Beam axle, trailing arms, Panhard Rod	MacPherson strut/ Indepen coil, sho ab	Live axle, Panhard Rod
STEERING	Rack-and-pinion	Rack-and-pinion	Rack-and-pinion	Rack-and-pinion	Rack-and-pinion
STEERING TURNS, lock-to-lock	2.8	3.9	3.7	3.1	
BRAKES, front & rear, in.	10.2 Disc/ 10.0 Drum	10.2 Disc/ 9.0 Drum	11.0 Disc/ 10.6 Disc	10.1 Disc/ 9.6 Disc	10.3 Disc/ 11.0 Disc
TIRES	195/60HR-14	195/60HR-14	195/60VR-15	195/60HR-14	195/60R-15
WHEELBASE, in.	102.7	101.2	99.1	99.4	104.3
VEHICLE LENGTH, in.	178.4	176.8	186.6	176.6	188.8
CURB WEIGHT, lbs.	2920	2392	2885	2824	3045
WEIGHT DISTRIBUTION, front & rear, %	53/47	55/45	61/39	59/41	54/46
SEATING CAPACITY	5	5	5	5	5
FUEL CAPACITY, gals.	15.0	14.5	16.6	18.5	15.8
AERODYNAMIC DRAG, coefficient	0.33	0.38	N/A	0.42	N/A
1985 EPA FUEL ECONOMY* City/Highway, mpg	19/24	23/29	19/25	18/22	17/22
0-60 MPH Acceleration, sec.	7.8	11.4	8.7 Est.	9.5	N/A†

*EPA estimates. Actual mileage will vary with maintenance, options, driving conditions and driving habits.
†Volvo Turbo 0-55 MPH Acceleration is 6.9. 0-60 MPH N/A
SOURCE: 1984/85 Manufacturers' Data

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Letters to the Editor

The Etruscans

Dear Sir: Dora Jane Hamblin's article did not mention the city of Perugia. This delightful medieval hilltop bastion is surrounded by Etruscan walls whose gateways are still in daily use; it has an Etruscan museum which serves as an excellent introduction to the contents of Rome's Villa Giulia. The nearby Volumni tombs and sarcophagi rank among the best of the smaller excavations and the Italian University for Foreigners offers a course in Etruscology that kindles a lifelong appreciation of these fascinating people.

Regardless of where they came from, where they vanished to or what the intricacies of their language were, the humanity portrayed in their sculptures makes a myth of time rather than of them. Confronted by the handsome couple shown on your cover, one has the urge to reach out to the proffered hand.

Anthony C. Smith
Toronto

Although Perugia is in Umbria and its residents spoke Umbrian rather than Etruscan, it was thoroughly Etruscanized culturally. Ed.

Dear Sir: In Book I, 58, Livy tells of the rape of Lucretia, the "virtuous Roman lady" referred to in your article, not by Superbus but by his son, Sextus Tarquinius. Thus, it was the act of Sextus and not Superbus that ignited the Romans to exile the Tarquins and bring an end to the monarchy.

Michael A. Krepich
Purcellville, Virginia

Dear Sir: Dora Jane Hamblin's article brought a "Thank God" to my mind.

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Perhaps, at last, the hard-pressed Italian government will find the funds to conserve the great treasures of Etruria.

My last visit, in 1982, found the Museo Archeologico in Florence in need of a thorough cleaning, the artifacts in need of orderly display. The mouth of the Chimera was filled with cigarette butts and candy wrappers. The museum in Tarquinia needed modern lighting and a severe dusting; its collection was assembled haphazardly. Just two of the painted underground tombs were open to the public and those were reached by a treacherous wooden stairway.

But the greatest abuse seemed to be neglect at the magnificent necropolis of Caere—now Cerveteri. The tombs that were open to the public were filled with all kinds of trash from Polaroid papers to Pepsi cans. There were no guides, and apparently no toilet facilities—people used the tombs. It almost spoiled the magnificence of the beehive vaults.

Only the Villa Giulia in Rome was superb in all respects. The Italian people recognize the glory of the Etruscan past; they should maintain this wonderful part of their heritage.

A. J. Corini
Yorktown, New York

Dear Sir: The hunter in the bottom picture on page 53 is using a sling, not a slingshot. The latter has an elastic band to propel its missile; the Etruscans had no elastic—but probably could knock out your left upper canine at 50 paces in one try.

Robert M. Adams
Dallas

Groundhogs

Dear Sir: When I was living in Sturbridge, Massachusetts, in 1962 one of our neighbors was a very large and successful groundhog, fondly known to the family as Sam. Our backyard was adjacent to a stretch of woods, and in the fall several wild apple trees constituted Sam's favorite shopping center. Dining alfresco, he would sit on his haunches and turn expertly in his hands the apple of his eye as he surveyed the remainder of the menu, spread out at his feet.

One day from the kitchen window, I watched Sam in this familiar pose. Movement at the other end of the yard caught my eye. The new arrival, Tige, was a long-haired tabby, not only a notable

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mouser but also a *bon vivant* of the first water. Tige's progress across the yard was alert and purposeful, direct for the lunching groundhog.

Knowing Tige's penchant for protecting his territory from all intruders (interloping dogs had been dealt unpleasant surprises), I was sure Sam's meal was about to be curtailed. Sam dropped his entrée, rose to his full height and barked, then on all fours began to close the distance between himself and the cat. Knowing from past experience that groundhogs will defend themselves if pressed and concerned for the safety of both animals, I moved to break off what promised to be a humdinger of a fight.

I was spellbound by what transpired next. The two creatures stopped nose to nose in the center of the yard and proceeded to sniff one another. Then they turned and strolled off, for all the world as if arm in arm, into the deep grass at the end of the yard.
Norman Schell
Northampton, Maine

Dear Smithsonian: Last summer I got to go on a trip to the Bronx Zoo in New York and they had an exhibit of a groundhog den that was so big that people could crawl through. It was fun to make believe that we were groundhogs. The most fun was popping our heads up out of the ground and seeing real groundhogs popping out of real groundhog holes right next to us. It was my favorite part of the whole zoo.

Here is a picture of me, my father and my friend Richard Jenks looking out from one of the groundhog holes [below]. If you know any children you should take them there too.
Madigan Murphy, age 7
Ocean Bluff, Massachusetts

Dear Sir: Mr. Gilbert says that in the Northeast woodchucks are the largest mammal, "easily and frequently seen." My experience with woodchucks is admittedly limited, but I have noticed, frequently and easily—particularly in New York City, Boston and Philadelphia—another mammal which is larger (averaging, I would say, 150 pounds). This mammal doesn't limit its range to metropolitan areas but is also often visible in rural and wilderness areas. I suspect that a woodchuck would agree that this larger mammal, the human, is more frequently and easily seen.
Neil S. Hiltunen
North Hampton, New Hampshire

Dear Sir: Bil Gilbert's excellent article missed a major fact concerning Groundhog Day. The woodchuck is a stand-in for the bear. February second is Candlemas, a Christian holy day which in pre-Christian times was celebrated as a spring festival, the day the bears came out of hibernation. It was part of a cult of bear

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ceremonialism which extended from Europe east into Eurasia and across the Bering Strait into North America. The seeing of the shadow as well as the idea of weather forecasting were part of it.

The German settlers in Pennsylvania revived a celebration which they had known in Europe. The animal so honored there was the badger, which had over the years been substituted for the bear.

One interesting coincidence is that among the Lenape, or Delaware, Indians —natives of Pennsylvania—a bear ritual was a major event in their yearly cycle. Bear ritualism still survives among many of the native peoples of North America and in Europe and Eurasia.

Malcolm F. Farmer
Whittier, California

Dear Sir: You failed to explain what must be the woodchuck's most astonishing faculty: maintaining a body temperature of 37 degrees F for months at a time in a burrow with 56 degree temperature.

C. W. Hanke
Bethesda, Maryland

Our article refers to two different situations. In the best of all possible dens the air temperature—and that of the woodchuck—remains about 56 F. This can vary, up or down, depending on den construction. But in true hibernators of the Northeast—our example was the woodland jumping mouse but can also apply to the woodchuck—a body temperature of 37 degrees F has been maintained for months experimentally. Ed.

Dear Sir: At a fishing club in northeastern Quebec, as I sat on the manager's porch, a groundhog came out of the house and jumped onto my lap. She wanted to be petted. She was completely housebroken—by one lesson with newspaper when very young.

Each summer she went with the manager and his wife on a cruise on their boat, down the St. Lawrence into the Atlantic. A supply of newspapers and alfalfa took care of her sanitation and food.

James W. Bagby, M.D.
St. Louis

Dear Sir: Our pride in Phil extends to a Groundhog King and Queen (high school seniors), Groundhog Banquet—and our Civic Complex's Groundhog Zoo Showcase, where Phil and his wife, Philomena, may be seen during the summer months.

William Null
Punxsutawney, Pennsylvania

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Martha Washington

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Dear Sir: The statement that "the *Spirit of St. Louis* was designed and built specifically to fly across the Atlantic . . ." is wrong. The Ryan monoplane selected by Lindbergh was identical to more than 200 planes flying the U.S. mail. The proven reliability of the aircraft and its engine was a major factor in the selection.

Lindbergh had the manufacturer make several modifications: the wings were extended to provide the lift needed to carry an extra gas tank, installed in the pilot's cabin, and a periscope was added because the extra tank blocked the pilot's view forward.

Norman H. Kreisman
Washington, D.C.

Irish shanachies

Dear Sir: Like Patrick Breslin, I was taken to the "auld country" at the age of 11 by my Irish parents. I wasn't fortunate enough to meet a shanachie, but I did play with lots of cousins who introduced me to the "gentle places" where the little people were said to dwell.

One special place was a "fairy ring," a circular grove of nut-bearing trees in the center of which was a little hill. When collecting the nuts we had to be very quiet so as not to disturb the cranky farmer who owned the land, the bull in the adjacent field or—last but not least—the little people who jealously guarded the ring.

This was very serious for all the children, but especially adventurous for the Yank from the Bronx.

Anne Murphy Baldinger
Upper Montclair, New Jersey

Modoc War

Dear Sir: As a member of the staff of the Armed Forces Medical Museum, formerly the Army Medical Museum, I can assure you that contrary to the impression given in Mr. Fincher's article, the museum is alive and well in Northwest Washington, on the grounds of the Walter Reed Army Medical Center.

True, some specimens were given to the Smithsonian Institution when the museum went into temporary storage, but the vast bulk of the collections, including medical instruments, archival materials and anatomical specimens, are available for research and education. The museum is open to the public 360 days a year.

Joan Macdonnell
Assistant Chief, Anatomical Collections
Washington, D.C.

Cardinal virtues

Dear Sir: New Mexicans picked the roadrunner as our state bird long before the cartoon became popular. The Spanish name for them is *paisano*, or fellow countryman—which fits the friendly feeling they inspire as they cock their heads as you pass by. I often see them on the irrigation-ditch roads near my home.

I know some people think the roadrunner doesn't exist, so I'm glad to know you are aware of our state bird.

Dolores Reynolds
Carlsbad, New Mexico

Dear Sir: As an old Populist, I rather agree the shrike might make a good emblem for a modern bank. But would the bank agree? In addition to its fine grey suit, the bird wears a bandit's black mask!

Atwater James
Pittsburgh

Dear Sir: Daddy cardinal feeding goldfish? Come on! No doubt the Mommy cardinal snapped a picture to prove it.

Dennis Fletcher
Los Angeles

Somebody did. See below. Ed.

See beyond the ordinary.

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Brigitte

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There's *Brigitte,* of France, attired in traditional dress that features a ruffled bonnet, lovely pinafore and a dress with elegant lacework. *Carmen,* of Spain, will wear a bright red dress with ruffled flounces as well as a matching *serape.*

Suisan, of Scotland, will be clad in a traditional tartan kilt and Highland hat. *Abigail,* of the United States, will be dressed in the Colonial style: a bright red bonnet with matching apron, and a flowered dress which she would probably have sewn herself.

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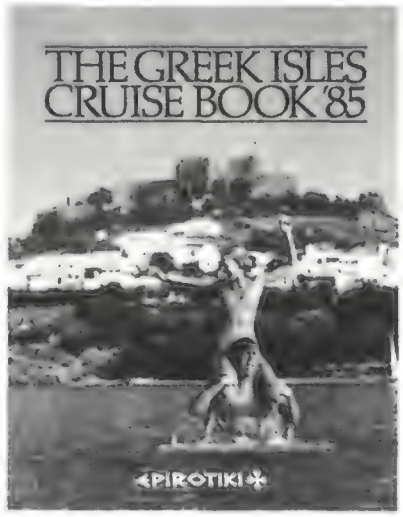

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Around the Mall and beyond

Smithsonian World, our highly successful television series, began coming to us last year with a number of magazine-style stories—subjects with which the Institution is either directly or indirectly concerned (SMITHSONIAN, February 1984). This month the program begins its second season.

The first glimpse I had of a couple of early shows indicated that the program's growing pains are over. The staff has settled into a reliable expertise, with beautiful camera work and entertaining interviews. I came away from my small previews knowing a lot of things I never knew before. (In my case, of course, that's not too difficult a criterion to maintain.)

The first show of the new season, which will air on the 24th of this month at 8 P.M., is entitled "Heroes and the Test of Time." It tells the stories of two men who lived in America in the late 19th century —artist Thomas Eakins, one of the greatest American painters, and soldier Gen. George Armstrong Custer, one of the enduring legends of American history. The second show, slated for May 29 at 9 P.M., is called "A Usable Past" and features various British connections important to the Smithsonian. This second program revealed, especially to me, the concern and discrimination of television film editors. I don't say that because I was, not too long ago, a magazine editor myself. I say it (with a large gulp of humility) because I actually took part in this particular show. I was *in* it, and the film editors had the good sense to get me *out* of it—at least nearly.

As I hope many of you will see for yourselves, the second show includes a revealing and amusing interview with the Brit-

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Miriam Rothschild, distinguished scientist and member of the famous dynasty, poses with pet shelties on the grounds of Ashton Wold, her country estate.

ish biologist Miriam Rothschild (above). Yes, she's one of *the* Rothschilds, all right, but instead of dabbling in the family millions, she opted for science—carrying on the tradition of her father and uncle—and has become recognized as a renowned and refreshingly eccentric entomologist, noted for her studies of fleas. (Her father, Charles, discovered that fleas spread the plague.) She's much honored at the Smithsonian, among other places. David McCullough, host of the program, has a fine talk with her at her estate in the English countryside, and she comes across as delightfully funny and also wonderfully wise.

Another segment takes us on a visit to Alnwick Castle, home of the Dukes of Northumberland (SMITHSONIAN, August 1984), to whom the Institution is related, albeit on the wrong side of the bed. James Smithson, our esteemed founder, was an illegitimate son of the first duke. Alnwick

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(pronounced Anneck) is a vast treasure-house on the moors. Television viewers are introduced to the present duke. They learn about the art, literature and souvenirs of a 700-year past that turn the castle into a remarkable museum, meticulously maintained.

Yet another segment of this show describes the somewhat similar, but very American, treasures of the Smithsonian which were brought to the Edinburgh International Festival last summer and which I wrote about in the August issue. This is the bit I took part in, so I watched it with innocent excitement. My heart beat a little faster as the camera came in on the Royal Scottish Museum, where I had spent four days, and several nights. The scene sharpened memories of my moment of glory, as I walked from one position (marked by a piece of tape on the floor) to another. I recalled the pleasant teamwork with my director, my interviewer (I began to think of David as my fellow star) and the crew. I relived special moments: the camaraderie of the nearby pub when we stopped for a bite before the night session; the ludicrous business of having, for the sake of consistency, to wear the same shirt day after day with never a chance to get it laundered; the assurances, so easy to believe: "You're really doing *very* well!" Ah, fame! You have found me at last!

Scene after scene passed before me. Familiar objects showed up, one after another, but not me. Then, at the end of the segment, I appeared, wearing that loathsome shirt, mouthing something dumb, and in a few seconds—to my intense relief—disappeared forever. The hours on camera had been reduced to what in opera is called spear carrying. And a good thing, too. Farewell, stardom! Ah there, cutting-room floor!

My one critical look at the show intrigued me as an editor. How had that wise decision to slice me down to the merest nubbin been made? I determined to explore the process which so skillfully points out the weakest link in a production and eliminates it. So I spent an hour or so at the *Smithsonian World* offices, trying to make friends with another medium that I was beginning, although grudgingly, to admire.

My initial impression of the offices was colored by the sight of a schedule board of handsome proportions. Red lines run-

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ning from date to date indicated "shoots"—the camera at work; blue lines tracked the editing process. Purple was the code for David McCullough's activities, everything from an interview in Antarctica to brushing his teeth in Georgetown. Green kept similar tabs on Martin Carr, executive producer of *Smithsonian World*.

The board disturbed me. It's exactly the kind of thing magazine editorial offices try to set up and invariably fail to maintain. Could it be that this new medium was so strong and determined that it really followed its schedule board? I stared at it thoughtfully, and then questioned a passing film editor about a particular date. "Don't pay any attention to that," he said. "That's been rescheduled." And I felt right at home.

Film editing is done entirely on a work print of the original footage—which remains sacrosanct until the editing is completed, the cuts, additions and alterations locked in. The process of selecting and rejecting what will finally appear is just another version of what magazine editors do: the cut-and-paste of text, the piles of transparencies—a large stack of rejects, a small one of selects.

Looking like an enormous spider in the middle of a web, the film editor sits at a complex editing "table," facing a small screen, surrounded by reels of film and sound tape. The snap of a couple of switches brings the screen to life. The reels turn silently; the story unfolds on the scratchy work print. Sound comes from the tape. It seems fine to you and me, but every few moments the editor stops it, hauls two ribbons onto the cutting board, snips a couple of feet from each, deftly tapes the good ends together and restarts the machine. It takes about the same time that an experienced text editor needs to blue-pencil a sentence.

I watched this process on a film that had patches of total darkness with a voice talking through it, and patches of silence while a picture demanded explanation. Both such gaps are filled in as editing continues. "Bridges" are written into the script to explain jumps from one subject or scene to another, and David is produced (by following the purple line on the chart) to record the narration.

The program often comes together in several editing rooms at once. A rough version, or cut, is screened for an initial nitpicking ("Still too much of Park. Cut

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another 20 seconds!"). At every stage the editors must watch the time, just as their magazine counterparts watch space.

The final version, timed to the second, may contain no more than one-fortieth of the original footage. I saw a segment of the first show, dealing with Custer's disaster at the Little Bighorn, which had been edited down from 20,000 feet of film to 500 feet. That's about like boiling down maple sap to get syrup.

Why, I wondered, was so much footage shot in the first place? Think of the money that could be saved by discriminating *before* the cameras exposed all that expensive film. Was this one reason why television can be so costly?

I asked the question, and got the answer that is, indeed, inevitable. As in any other medium of journalism, a series of television specials like *Smithsonian World* must have the material in order to produce the work. And the material is film footage. A magazine reporter comes away from an assignment with far more knowledge of the subject than can ever be squeezed into print. Otherwise the article seems "thin," contrived. Similarly, the television producer shoots miles of marvelous footage, out of which a couple of hundred yards are chosen to tell the story. The film that reaches our living rooms is truly elite.

All the rest of those glorious pictures join me on the floor, sacrificed for the sake of quality. A good fate, when you look at it that way.

Three other *Smithsonian World* shows will also air this season and will include visits to the Galápagos Islands, the underwater caves of the Bahamas, and the Space Telescope Operations Command Center at Goddard Space Flight Center. One segment will treat audiences to the first filmed view of an isolated fog-shrouded mesa called Cerro de la Neblina, deep in the Venezuelan jungle, where tropical and Arctic plants exist side by side and carnivorous plants abound. Ninety percent of the plant life there is found nowhere else in the world. In this "Mountain of the Mists" we will see a truly unique environment in all its diversity and complexity. Isn't that what the Smithsonian is all about?

Edwards Park

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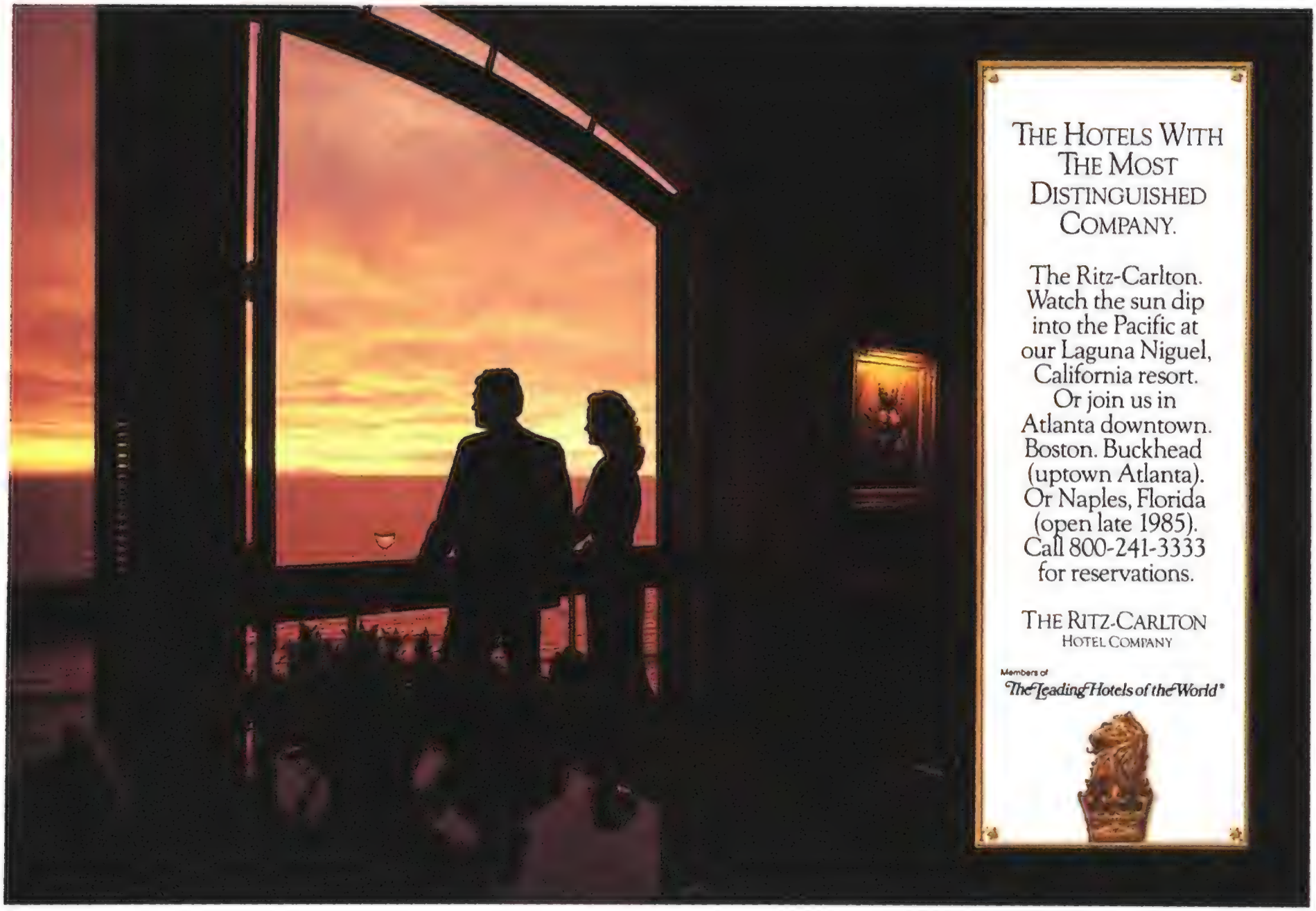

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Phenomena, comment and notes

For an addict of the daily newspapers, a glimpse of the "big picture" helps give a feeling for what the arithmetic of today holds for tomorrow

Ever since I suddenly realized I could read the words in a *Captain Marvel* comic book, there has been no turning back. I'll pick up and read anything I can get my hands on, whether it is a trade magazine at the service station or a cereal box on the breakfast table. At work my productivity drops to zero when a new batch of magazines and journals lands on my desk. Worst of all is an incurable addiction to newspapers. My day starts with two drugs: a cup of tea, to get my engine turning over, and a couple of thousand words of information, to do the same thing for gray cells. (I always start with the comics, repeating daily the evolution of my reading abilities.) Lunch becomes a sticky business, as the grease from a grilled-cheese sandwich draws the ink out of the *New York Times*. On Sundays, a couple of pounds of newspapers and a modest bag of donuts can spell the death of five or six hours.

The trouble with all this newspaper reading is that at the end of the day, not to mention the month, I don't have much of a grasp on what is going on. I have some memory of events and names and even some numbers, but not of how things are going. I find out where we are, but not where we are heading. What is missing is the Big Picture. For years I tried to do it myself, industriously clipping stories in dozens of subject areas, filling a four-drawer filing cabinet with facts I hardly ever used.

So I'm a sucker for anybody who does all this for me, somebody who has spent the past ten years reading the *Times* and all the government reports and the statistics published by the United Nations' specialized agencies. And that's what they do at the Worldwatch Institute. Their *State of the World 1985* is out, the second in an annual series of book-length reports on how the world is doing. Reading it gives me the feeling of a grasp for the world situation, the kind of global perspective that I always assumed was the preserve of those international technocrats who seem to spend their lives flying to conferences in exotic capitals. The book is exciting in that sense, but it is not pleasant.

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Take the most ghastly story in the papers this winter—the famine in Africa. It is bad enough to read about people dying right now. But the Worldwatch volume gives a sense of the trends involved, the inexorable force of the arithmetic. In Ethiopia, where eroding land is tilled and trees are cut for fuel and warmth, topsoil is being lost at the rate of a billion tons a year. And while its agricultural potential is being lost, its population is growing rapidly. From its current population of 34 million, the World Bank estimates, the country could grow to 231 million by the year 2045. Now this arithmetic is purely a demographic exercise. If the country cannot feed itself now, presumably it will not be able to feed seven times its current population, drought or no drought.

Lester R. Brown, Worldwatch president and project director for the book, says in the opening chapter that the real point about Africa is that "there are no developments in prospect on either the agricultural or the family planning side of the food/population equation that will arrest the slide in per capita food production." The rains will return eventually, but Africa's problems will not go away.

The world picture is not as disastrous, but it is sobering. World grain production increased faster than population from 1950 to 1973, the year of the first oil crisis. Since then it has kept just barely ahead. The increase in world fish catches slowed abruptly about 1970, so that the per capita catch is dropping. More surprising to me, world beef production stopped growing in 1976, and per capita production has dropped ten percent since then.

These numbers are for the world as a whole, and mask the contrasts between countries. In China, grain production per capita is up 30 percent since 1970, to around 250 kilograms per year. But per capita production peaked in Africa in 1967, at about 180 kilograms a year. Since then it has dropped nearly 20 percent.

The question for some developing countries, in Brown's terminology, is whether they will break out of the closing trap they are in or whether they will break down. Can they successfully negotiate the demographic transition? Simply put, there are three stages. In the first, that of traditional societies, both birth and death rates are high, essentially in balance. Societies have existed this way

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for thousands of years, since history began.

In the second stage, death rates fall as public health improves, vaccines become available and food production expands. Birth rates stay high, and such a population expands typically at three percent a year. That last doesn't sound so bad until you work out the arithmetic and discover it means that after a single century such a population will be 20 times what it was at the start.

In the third stage birth rates decline until they come into balance with death rates. A society can also stay in this stage indefinitely. What it cannot do is stay too many years in the second stage. Many developing countries, Brown says, have been in the middle stage since roughly 1950, which means they are now in their fourth decade of three-percent growth. Mounting population pressures are destroying forests, grasslands and croplands, and inevitably the death rate begins to climb again. If some of these countries do not break out of the second stage soon, they are going to fall back into the first.

Some avenues of relief are closing for the first time in history. Take land. As Will Rogers once said of ocean frontage: ". . . they wasn't making any more." This is becoming true for cropland around the world. From the beginning of agriculture until around 1950, Brown points out, growth in cropland area more or less kept pace with the growth in population. Now it is not even close. New cropland is still being added in some countries, but others are losing acreage. All the clearing, draining and irrigating going on around the world is barely keeping a step ahead of the desertification, urbanization and pure wearing out that takes land out of production. In terms of total numbers, what we have now is pretty much all we are going to have. The world may add four percent to its croplands between 1980 and 2000, a period in which it is expected to add 40 percent to its population.

Brown raises the possibility that human activity in some Third World countries, particularly Africa, may be changing the climate. The cutting of forests increases rainfall runoff and reduces the amount of moisture returned to the atmosphere through evaporation and transpiration, thus reducing rainfall. It is still difficult to say what is the result of natural cycles and what is man-induced, but there's no doubt that water is becoming scarcer in

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Africa. Flows in the Senegal, Niger and Chari Rivers are sharply down. In the ten years from 1963 to 1973, the surface area of Lake Chad dropped by two-thirds, its volume by three-fourths. Since then the lake has split in two.

Marine fisheries are doing better than I thought. The 1983 total catch of 74 million tons works out to 16 kilograms per person for the world, or almost a quarter of all animal protein consumed. More than 100 species of finfish and shellfish are harvested commercially around the world, and 22 species provide 100,000 tons or more. But here, too, we have turned a corner. Per capita catches have been slowly dropping since their high in 1970. At least 11 major fisheries have been depleted to the point of collapse, ranging from the fabled anchovy in Peru to the Alaska crab. Using data from the United Nations Food and Agriculture Organization (FAO), Brown estimates that by the early 1980s the annual commercial catch was some 11 million tons under its potential because of overfishing.

Optimists point to species that are underfished, at least in some parts of the world. Squid (right) are heavily fished around Japan and in the eastern Atlantic and Mediterranean, yielding about 1.5 million tons a year for those countries where they are table favorites. In other parts of the world they are hardly touched. The question is whether the rest of the world can develop a taste for this cephalopod.

Krill, crustaceans that form huge concentrations in Antarctic waters, are often cited as a new protein source, and indeed the world catch has risen to more than half a million tons. But both the Soviet Union and Japan, the principal harvesters, are finding it difficult to make them palatable to consumers. And krill are so far from potential markets that costs are high: it takes about a ton of fuel oil to catch a ton of krill.

At best, according to FAO estimates, the world catch from all fisheries may not exceed 93 million tons by the turn of the century. Demand is expected to reach at least 120 million tons. For some of us, this will mean only the inconvenience of higher prices. For others, it will mean a drop in the precious little protein they get now.

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The most important numbers have to do with people. The World Bank has come up with some estimates of when the populations of various countries will stabilize, and what those numbers will be. They are more than guesses: the people who will have those babies are alive today. Nigeria is projected to reach replacement-level fertility in 2035 with a population of 618 million, more than that of all Africa today. India, in just the next quarter-century, will add about a billion people, the equivalent of China's current population.

One finishes the book with a new comprehension for the sheer magnitude of the problems, a little like reading enough astronomy to acquire some intuitive feel for the distances involved. Brown offers an improbable analogy to give an idea of the scale of effort needed: "If Africa is drying out because of population-induced changes in the land use . . . then the continuous, continent-wide decline in per capita food production can be reversed only by tree planting, family planning, soil conservation and water resource development on a scale and with an urgency exceeding any international collaborative effort since the Allied Powers mobilized during World War II."

When I read the first *State of the World* a year ago (*Phenomena*, April 1984), I was going to propose to Worldwatch that they rent space in some public place for a bank of electronic maps which would show in color how each category of planetary husbandry was faring. Passersby could judge the fate of the world by changes in hue, just as the pilots in *2001* could see by the blocks of color on their instrument panel how their spacecraft was faring. This time I am so caught up in the directions of such huge forces—population growth, soil erosion—that all I want are the curves, just enough so I can see whether the slopes are changing.

State of the World 1985 has given me a context for reading the newspapers. Sitting with my *Times* in the drugstore cafeteria, I can nod knowingly with the aplomb of a technocrat at the latest intelligence from these nations struggling in the second stage. Then, of course, I have to figure out what I can do.

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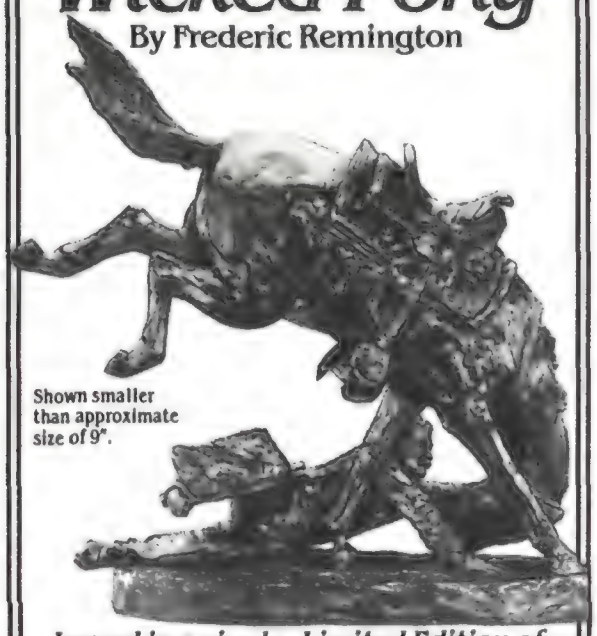

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Lotteries have changed peoples' fortunes in all ages—even Jonah was picked by lot to face the whale

The modern rebirth of interest in lotteries is easy to fathom: just consider the luck of Michael Wittkowski. On September 1, 1984, Wittkowski won the Illinois State Lottery, worth about $40 million, the largest single payoff in North American history. You can put him down as a big plus in favor of the lottery.

Actually, it is not the winner's purse but the losers' sense of the fairness of lotteries that is the best thing about them. All of us have depended on their unimpeachable equity and randomness at times, from schooldays on. The process of choosing up sides for team games on the playground, or deciding who is in and who is out, often depends on little lotteries counted on the fingers, on the fall of a tennis racket, or on the last hand able to grasp and swing a baseball bat.

Despite such cozy childhood precedents, however, the fairness and sensibility of lotteries are constantly called into question, as is the case in a current spate of arguments over a national lottery. Those urging the federal government to sponsor such a lottery become particularly convincing at tax time. Certainly, lotteries *appear* to be a painless way to help state and local governments to stay solvent. And every dollar dragooned out of private purses via a lottery is one that does not have to be raised through a hateful tax. So the argument goes.

This line of reasoning is not new: it was found to be mightily persuasive by one of our Founding Fathers. Thomas Jefferson, in an essay penned in February 1826, saw the lottery as "a salutary instrument" and a "tax . . . laid on the willing only, that is to say, on those who can risk the price of a ticket without sensible injury for the possibility of a higher prize."

Jefferson's reason for writing the essay was to induce the Virginia legislature to allow him to run a private lottery so he could sell off the bulk of his lands around Monticello. To his mind, the lottery was virtually the only way of selling large and expensive parcels of agricultural land, especially in a depressed tobacco-and-wheat economy with little cash and fewer buyers. "This method of selling," Jefferson noted sadly, "was formerly very much resorted to, until it was thought to nourish too much a spirit of hazard."

And as a result of that spirit, as early as 1769 the legislature had begun to control all lotteries in the Virginia Colony. After the founding of the United States, Jefferson observed between 1782 and 1820 close to 70 instances in which the legislature put its stamp of approval on lotteries to raise money for schools, bridges, mills and river-and-stream clearings, as well as general state revenues. In a 1791 case, a lottery was held simply to allow a nervous author enough money and leisure to finish a book. "This, then," Jefferson urged, "is a declaration by the nation, that an act was not immoral, of which they were in the habitual use themselves as a part of the regular means of supporting the government; the tax on the vendor of tickets was their share of the profits, and if their share was innocent, his could not be criminal."

In not condemning them outright, Jefferson was following the conventional wisdom regarding lotteries that had been handed down from classical and medieval times. Far from being a debased game, lots were a way of divining the future and of giving the gods their own voice in everyday affairs.

Herodotus mentions lots in connection with the reign of the ancient Lydian king Atys. During the same famine in which ballplaying and dicing were invented as a diversion for his hungry populace, the resourceful monarch was forced to divide the people into two groups. He made them draw lots to determine who would stay and who would leave.

By the time of Herodotus, lots, or "sorts" as they were sometimes known,

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Musée du Louvre, Paris

In this detail from a 15th-century painting of Calvary, by Andrea Mantegna, Roman soldiers cast lots to see who will get Christ's garments.

seem to have become a commonplace of Greek public life. Elections at Athens by lottery (sortition) were thought to be more equitable and less likely to encourage political dynasties. So, too, the luck of the draw figures in Homer, where the funeral games in honor of Patroclus began with a chariot race. The five competitors cast their lots in Achilles' helmet to determine their starting places.

In Roman life, casting lots was the basis of a religious rite, and was used for predicting the future. By Cicero's time, however, the casting of lots had fallen out of favor in Roman religion. Said he: "The whole scheme of divination by lots was fraudulently contrived from mercenary motives, or as a means of encouraging superstition and error."

In addition to religious uses, lots also served important political and social ends. For example, the judges who were to pronounce sentences for publicly condemned criminals were selected by lot. Julius Caesar was so selected to condemn Gaius Rabirius, a political enemy. For their drinking sessions after meals, the Romans would select from among the guests a master of ceremonies (the *magister* or *arbiter bibendi*) to preside over the evening's toasts. He was selected by lots.

The idea of casting lots as an aid to decision making received a curious mixture of approval and censure from medieval officials. There is, of course, a Biblical precedent in the case of Jonah. When Jonah's shipmates were seeking a reason for the great sea storm that threatened their lives, they cast lots. Since the draw clearly pointed to Jonah as the object of God's anger, he was thrown overboard.

It seems clear that lotteries were seldom regarded as intrinsically evil. It was their abuse that caused them to be condemned. There was, however, a tendency in the late Middle Ages to see lots as a flirtation with witchcraft. And something of this spirit must have inspired the American author Shirley Jackson when she wrote her famous short story "The Lottery" in 1948. In that tale, one of the most popular short stories of its day, a mysterious lottery is held in a small New England town. The "winner," a woman named Tessie Hutchinson, picks the only paper slip with a black spot on it—and is stoned to death by the rest of the townspeople.

Lotteries have long held an important place on the pages of great literature. In addition to those cases we have seen in Homer and the Bible (where, significantly, lots are cast for the sacred garments on Golgotha), there is the case of *The Canterbury Tales*, wherein lots are drawn to decide which traveler will tell the first tale.

Note, too, how a winning ticket in a Mexican lottery brings about the action in B. Traven's *Treasure of the Sierra Madre*. Is it purely coincidental that this story is a common redaction of Chaucer's "Pardoner's Tale"?

But by far the greatest problem with any lottery is the certain dearth of winning tickets, paper slips or broomstraws. And this is unfortunately true whether you're trying to ease the national tax burden or just trying to stake out your own plot on Easy Street.

So it's nice to know that someone has thought out an appropriate response to the agony of this particular kind of defeat. On April 24, 1752, the *Virginia Gazette*, a newspaper published in Williamsburg, published "A Meditation . . . by an unsuccessful Adventurer in a Late Lottery." In it, the anonymous writer, possibly a sore loser, confidently asked: "Why frets my Soul because of a Blank! or why doth it lament at having missed of a Prize? Suppose I had got one of the Ten Thousands, what then?—Why then, slap dash down at a Blow, with the whole Catalogue of my Wants. But soft—Would not the Destruction of those Wants be the Generation of others. . . . At this Rate, what would be gained by a Ten Thousand Pound Prize?—Nothing—Or, what have I lost by a Blank?—Nothing at all.—Why then, a Blank is as good as a Ten Thousand Pound Prize. . . . Then what are they who rejoice at a Prize?—Prize Fools. And what are they who grieve at a Blank?—Blank Fools."

I sincerely hope there was at least one mid-18th-century lottery for a vineyard that produced sour grapes, for I know who deserved to win it.

Michael Olmert

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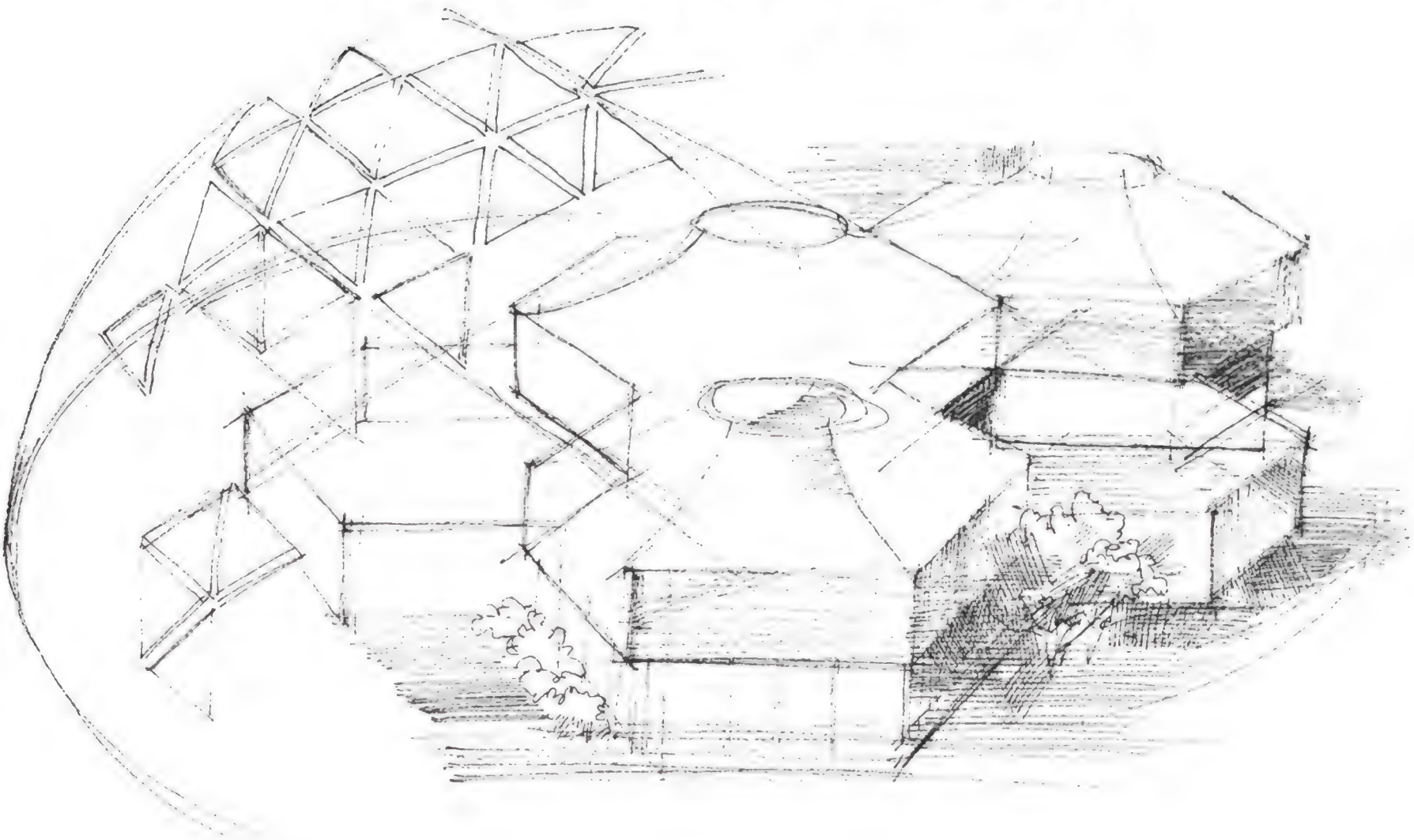

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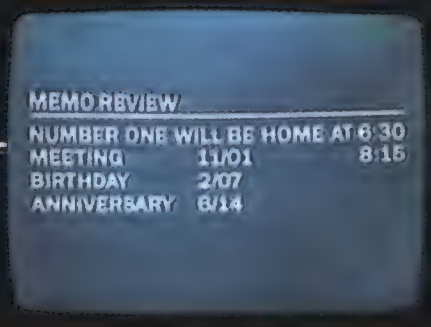

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By Donald Dale Jackson

Pursued in the wild for the pet trade, parrots are perched on a risky limb

Bold, beautiful and hard to resist, macaws and other pricey parrots are being smuggled into this country; many die in the process

Opposite: Safe for now, at least, scarlet macaw, left, and blue and gold macaw roost in a Brazilian jungle.

Taped and bound, a dead yellow-naped parrot was among contraband birds seized at U.S.-Mexico border.

On a soggy summer morning at the Miami International Airport, a Guyana Airways cargo plane just in from Georgetown, on the northern coast of South America, taxis to a quiet corner of the terminal and parks. Two Customs agents and a veterinarian from the Agriculture Department are waiting, along with a crew of freight handlers and Rosa Perez, a young inspector for the U.S. Fish and Wildlife Service (USFWS). The American pilot, wearing a New York Yankees baseball cap, climbs down a rope ladder from the cargo bay and greets the welcoming party. "That's Noah's Ark," he says, gesturing toward the plane.

Minutes later, a line of three-foot-long wooden crates begins moving down a conveyor belt between the plane and a truck. Green wire mesh covers one side of the crates and behind it gaudy splashes of color flash by—orange, vivid red, rich blue, yellow-green. "The documents say 1,650 parrots are in this shipment," Perez reports. "Six hundred orange-winged amazons, 200 scarlet macaws, yellow-crowned amazons, blue and gold macaws, a few other types."

The birds seem subdued but alert. A Customs agent points to a prone and motionless orange-winged amazon. "That's only about ten dead out of this shipment all told," Perez responds. "That's not bad. On one shipment from Africa there was no air circulating

The booming traffic in parrots

Not as rare in captivity as cockatoo, hyacinth macaw from Brazil or Bolivia can cost $1,500 to $6,000.

At a commercial breeding station in Miami, bird lover plays with a young sun conure, a medium-size parrot.

in the plane and every bird on board died—three or four thousand of them."

The crates have now been stacked five high and a dozen deep in the truck that will take them to a quarantine station owned by the dealer who imported the birds. Muffled squawks emerge from somewhere within the bank of crates. The truck is unloaded at the station, where workmen wearing protective gloves and shower caps transfer the birds to large cages. If they pass the health checks here, they will be released and ready for sale in a month.

"This shipment is probably worth $100,000," station manager Paul Paré says as the last of the crates disappears into the now-riotous interior. "We import from Honduras, Argentina, Guyana, Peru, Belgium, South Africa. Bolivia before the ban, and maybe still —down there it depends on how they feel that day." Paré, who is in his 20s, wears a blue polo shirt and a gold chain around his neck. "We make an honest living. The government could close the whole thing down tomorrow but we can't worry about that."

A planeload of legally imported parrots like the flight from Guyana arrives in this country about once every other day, usually at either Miami or Los Angeles. The birds are caught by trappers in South America, Asia and, less frequently, Africa. The trappers sell them to wildlife dealers who export them to the United States, where the demand for the showier, more entertaining creatures has been growing for more than a decade. "By now we must have imported enough for everyone in the country to have one," says a USFWS agent.

The palm cockatoo, a native of Australia and Asia, may sell for more than $6,000 in this country.

Blue and gold macaws are big, showy birds and they can bite. This pair could be preening—or threatening.

It's true: parrots have become our most coveted avian companions. Once fancied by royalty, they now strike poses for television commercials and hobnob with celebrity bird keepers like Robin Williams and Martina Navratilova. Their booming popularity as pets may reflect a society shifting from houses to apartments and condominiums, or perhaps an increase in the number of people living alone, but it's certainly not because they're cheap. The fledgling scarlet macaws among the immigrants who arrived via Guyana Airways eventually retailed for about $1,200 each. For rare species like the spectacular hyacinth macaws from South America or the severely dignified black palm cockatoos from Asia and Australia, the price can reach $6,000 and more. Overall, the annual sale of parrots here may run as high as $300 million a year.

All of those numbers with zeroes trailing after them have inspired a lucrative and increasingly sophisticated business in parrot smuggling. Dozens of countries now prohibit or restrict the export of their native wildlife for commercial purposes, and 87 nations have signed the ten-year-old Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which requires special permits for the export of most types of parrots and many other animals. This forces illegal traders to maneuver through an ever-thornier thicket of bureaucratic rules and forms, but so far they have found a way. The volume of the illegal parrot trade is anybody's guess, but the best estimate probably comes from the World Wildlife Fund's trade-monitoring unit, TRAFFIC (U.S.A.). Ginette Hemley of TRAFFIC (U.S.A.) in Washington, D.C., believes that the number of parrots traded illegally each year is about a quarter of the total traded legally. That works out to be at least 100,000 contraband birds every year, worldwide, by their calculations.

While parrot monitors, students, protectors, importers and unaffiliated admirers all deplore the illicit traffic, there is disagreement on what it means to the wild populations and on long-term strategies for dealing with it. Several parrot species, primarily Caribbean island dwellers, have been nudged to the brink of extinction by either trapping, the clearing of their forest habitat, or a combination of these pressures. "Timber production and agricultural expansion both have more impact on the birds than traders do," says

Nestling parrots that have been captured in the wild are offered for sale at a market in Bangkok, Thailand.

At a motel on the Texas-Mexico border, federal agents recently found dead parrots abandoned by smuggler.

Fran Lipscomb of the National Audubon Society, "but because they are going on, the effect of the trader —legal or illegal—is that much greater."

The Animal Welfare Institute led protectionist groups (derided as "humaniacs" by their foes in the pet industry) to press for a ban on the sale of wild-caught birds, an idea recently transformed into law by the State of New York. Parrots are the main target of such a ban, but even the most ardent conservationists do not contend that all parrots are threatened. In the Amazon Basin, the forests of Indonesia and elsewhere, many species are multiplying as raucously as ever.

Ornithologist Robert Ridgely of the Philadelphia Academy of Natural Sciences spent several years surveying wild parrots in South America. He sees no reason why they cannot be trapped and exported for the pet trade under controls that protect their habitat. "I take the practical view that nature has to pay its way in the face of growing human throngs and human needs," he says. "If the birds are seen as a resource it makes sense economically to preserve their habitat."

There are great voids in the existing data about parrot populations and their vitality. Little is known, moreover, about how the young birds are actually captured and about how many die between capture and export. Some speculate that as many as ten birds succumb for every one that survives. The minimal information available suggests that parrot trapping is both cruel and wasteful.

Parrot pirates come in two principal varieties, crude and refined. There are the midnight bird-supply bravos who operate brazenly along the Mexican border and there is the clean-fingernail crowd, which specializes in graft and changes in official documents.

Mexican parrots have been dosed with tequila-laced feed and conveyed across the border in tire wells, floated across the Rio Grande on rafts, and stuffed beneath women's clothing in beak-taped silence. Border smugglers evade quarantine regulations, which are designed to protect the U.S. poultry industry from parrot-borne diseases. "There's no good guess on how many birds come in illegally from Mexico," says Don Carr, chief of the Justice Department's wildlife section, "except that it's probably 100 times more than you would guess."

The more sophisticated operators in the parrot trade "launder" CITES documents to avoid bans and restrictions on traffic in threatened species. One ploy is to bribe a bureaucrat to misidentify a protected bird —a hyacinth macaw, say—as a more common one, perhaps the easy-to-find blue and gold macaw. Parrots are frequently smuggled out of countries where the export of commercial wildlife is outlawed, such as Brazil and Australia, and shipped with proper documents from countries like Bolivia and Malaysia. The "black holes" where laundering has been most common, conservationists agree, are Bolivia, Paraguay, Panama, Malaysia and Singapore.

U.S. officials charged with stemming the illegal parrot trade often feel frustrated and overmatched. The front lines are manned by Rosa Perez and just 35 other wildlife inspectors, a cadre able to look at only a quarter of the arriving wildlife shipments. Inspectors are supposed to know where hundreds of species occur in the wild and the wildlife laws of dozens of countries. "It's tough to ascertain the foreign laws

and tough to prove when they're broken," says Justice's Don Carr. "It's often difficult to show where the birds actually came from and it's hard to show criminal intent." The result is that few illegal shipments are caught and few cases are made.

"If I had to advise somebody on a nice clean illegitimate profitable business," says a prosecutor who has handled parrot cases, "I'd say don't go into drugs, you'll get shot. Go into bird smuggling. You're not going to get hurt, you won't get caught and nobody's going to give a damn."

A lot of people do give a damn, though, when smuggled birds turn out to be carriers of disease. One of the most virulent parrot-borne disorders is Exotic Newcastle disease, outbreaks of which have wiped out millions of domestic chickens. In January, Exotic Newcastle was identified in a gray-cheeked parakeet that had been purchased from a dealer in Tampa. The parakeet was part of a shipment of several hundred birds that had been released from a Florida quarantine station in December and subsequently dispersed to 16 or 17 states and Puerto Rico. There's an outside chance that the bird slipped through quarantine undetected. What is far more likely, however, is that it was infected after quarantine when it came into contact with smuggled birds.

One alternative to importing parrots is breeding them in captivity here. A number of zoos, dealers and parrot owners are doing just that. Elaine Michele Spear, a horticulturist and a member of the Greater Miami Avicultural Society, has been raising birds as a hobby since she was a teenager. Several years ago, she began acquiring mature cockatoos, macaws and other large parrots from people in the United States. She now owns about 80 of the birds and is breeding them on a farm in southern Dade County. "I'm doing this mainly for love," she explains. "My husband is an accountant and he says that I'll never make money because I've got so much tied up in it. I guess he's right."

Parrots have been popular pets ever since Alexander the Great brought a few back from India for his mentor Aristotle in the fourth century B.C. Much of what we believe about these splendid birds derives from salty lore rather than empirical research. "That bird is maybe two hundred years old, Hawkins," Long John Silver hisses to young Jim in Robert Louis Stevenson's *Treasure Island*. "They lives forever, mostly." In fact, the pirate wasn't far off—parrots have been known to live for more than 100 years.

The 332 species in the parrot order (which is formally designated Psittaciformes) range in size from diminutive pygmy parrots to the stately cockatoos and three-foot-long hyacinth macaws at the top of the line. They live primarily in the tropical belt extending from Australia and Indonesia through South and Central America to sub-Saharan Africa and India. Parrots' most distinctive physical features are their powerful, hooked bills and feet with two toes pointing forward and two backward, a configuration that makes them good climbers but wobbly and foolish-looking pedestrians. Their taste in food, running to fruit, nuts and seeds, often offends farmers whose fields or orchards they raid. Most large parrots nest in cavities in decaying trees, and it is the presence or absence of such trees that is the main check on their numbers.

It is of course their "talking" ability that sets parrots apart. "Here's this old innocent bird o'mine swearing blue fire and none the wiser," Long John

When Miami Customs inspectors opened arriving passenger's "present," their suspicions were confirmed.

To foil inspection at the Mexican border, a smuggler may stuff birds into pantyhose, hide them in spare tire.

Silver observes. In fact, parrots do seem to mimic what they hear without any ostensible appreciation of what it means. Scientists have discovered that young birds in the wild imitate the sounds their parents make—learn their own language—while ignoring the calls of other birds. But the purpose of all the screeching and squawking is still unclear. "It doesn't appear to be territorial or connected with sex," says Ridgely. The volume seems to increase when the birds are in flight. "It could be directions, or caution, or saying this or that tree is where the food is," suggests Donald Bruning, curator of birds at New York's Bronx Zoo.

Caterwauling, muttering and screaming

Whatever their calls mean, wild parrots live a good part of their lives in full cry. Scientists studying a flock of Jamaican amazons found that the daily chorus began at first light and could be heard two miles away. After several hours of preening and caterwauling they flew noisily off to feed. Only for a few hours in early afternoon were they relatively quiet. They were once again in full voice on the flight home in late afternoon. Even when preening, the scientists found, they muttered softly to themselves.

The spectacle of a flock of macaws in flight—taut bodies stretched full length, great wings pumping the air, sun glinting off vividly colored feathers—is one of nature's most striking extravaganzas. Family groups, either mated pairs or the parents and one or two offspring, are usually distinguishable within a flock. Most parrots mate for life, and they seem to show concern when their companions are captured. "They'll stay close and scream," Bruning says. "It's almost as if they're trying to rescue them."

Gathering data on the feeding range, social organization and other behavioral traits of wild parrots has been hampered until recently by the lack of an effective means of tagging and tracking them: the birds would pulverize radio transmitters in their strong beaks. But ornithologist Stanley Temple of the University of Wisconsin has now developed a necklacelike transmitting device that the beaks can't reach, and this spring he has begun trapping, tagging and tracking Hispaniolan amazons in Puerto Rico in an effort to fill some research gaps.

The antics of captive Pollys and Cap'n Flints and Freds (the cockatoo on TV's *Baretta* was named Fred) charm and amuse their human keepers. Many parrot owners believe that their birds show both affection and exceptional intelligence, in spite of scientists' claims to the contrary. "When they nuzzle each other in the wild, they're mostly just getting rid of lice," Robert Ridgely says. He also denies that parrots are wiser than owls or any other birds.

Parrots can be unpredictable. One generally amiable sulphur-crested cockatoo named Tommy, for example, took umbrage when a friend of his owner began to wear glasses. After due reflection, he reached up and bit the man on the lip. "From that day forward," the chastened victim wrote, "Tommy refused to become friendly." But parrot-people relations can go sour on either side. People often call the Bronx Zoo to report that they can't cope with their parrots—they're too noisy, destructive or nasty.

Why do people keep parrots? "I'll tell you why," a cynical bird-store owner in New Jersey says. "The women want them for snob appeal and the men because it's macho—they derive some virility from keeping a big bird." As he spoke a muscular young man who seemed to illustrate his point swaggered into the store. He smiled as the blue and gold macaw he had been boarding there hopped onto his shoulder; then he pulled out a $100 bill and threw it onto the counter. Bird and owner both looked pleased.

Should you buy a parrot? The Bronx Zoo advises against it. "Never buy a parrot or macaw," a sign at the zoo's bird house tells visitors. "They are declining everywhere, they breed slowly and their capture often involves casualties." They could also be illegal or

A frequent contributor, Donald Jackson wrote about Lydia Pinkham in the July 1984 issue. His article on gypsy moths appeared in May 1984.

After inspection, parrots are removed from crates, held in cages at quarantine station for at least 30 days.

In Miami, U.S. inspector Pat Rogers checks shipment of blue-fronted amazons on arrival from Argentina.

diseased. Though most pet stores are reputable and many of the birds they sell are bred domestically, smuggled parrots do turn up.

Dr. Bern Levine, a short, fortyish man with a neatly trimmed dark beard, is one of the country's leading parrot dealers, an importer-exporter who runs a two-million-dollar-a-year bird business. His hangarlike warehouse in Miami is filled with thousands of brightly colored caged birds. When an interviewer asks him about the illegal parrot trade, Levine smiles and replies: "We run a pretty clean show, no matter what you may hear."

The Fish and Wildlife people want dramatic busts, Levine says. "They see themselves as sheriffs. Hell, the Guyana government misspells a word on a form and they hold up a whole shipment. There are some people who think that nothing that breathes should come into this country." As Levine speaks, a chattering hum rises from the cages in the warehouse. Flecks of red and green flit from side to side.

Most parrots that pass through an import depot like Levine's en route to an American pet store were snatched from their nests by back-country trappers. Some trappers use nets, others apply sticky substances to branches where the birds perch, while still others climb the trunks and pluck the nestlings from their sheltered holes. The most destructive technique is to chop down the nest tree, gambling that some birds will survive the fall. Those familiar with the parrot trade in South America say that trappers in remote villages gather young birds and then simply await the periodic visits by wildlife dealers from the cities.

The price rises as birds ascend the chain of middlemen and dealers. "A trapper who takes a macaw in Bolivia may get 50 cents for it," explains a staff member of TRAFFIC (U.S.A.). "A middleman may get $10, an exporter $50, and the bird will sell here for $2,000." Even from a *campesino*'s perspective, the pay is not bad. "A man with a parrot has two choices," Donald Bruning says. "He can sell it or eat it. If he sells it he'll probably make enough to eat for a week or two."

Many parrots fail to survive their jarring introduction to civilization. American breeder Don Wells saw one reason why when he visited a Bolivian trapper's house in 1979 in search of red-fronted macaws, a species that has since been added to the endangered list. He was led to a windowless mud hut and shown 15 living birds and another ten or 15 carcasses. The birds had not been watered or fed. Bruning saw a crate in a Jakarta, Indonesia, bird market stuffed with perhaps 150 birds when there was room for about a half-dozen. The bottom of the crate was literally solid with the carcasses of dead birds.

Rare and protected parrots that survive their first brush with captivity are often shuttled across unpatrolled borders to countries with money-laundering facilities. In recent years, the most notorious offender has been Bolivia—in Don Carr's estimation, "the

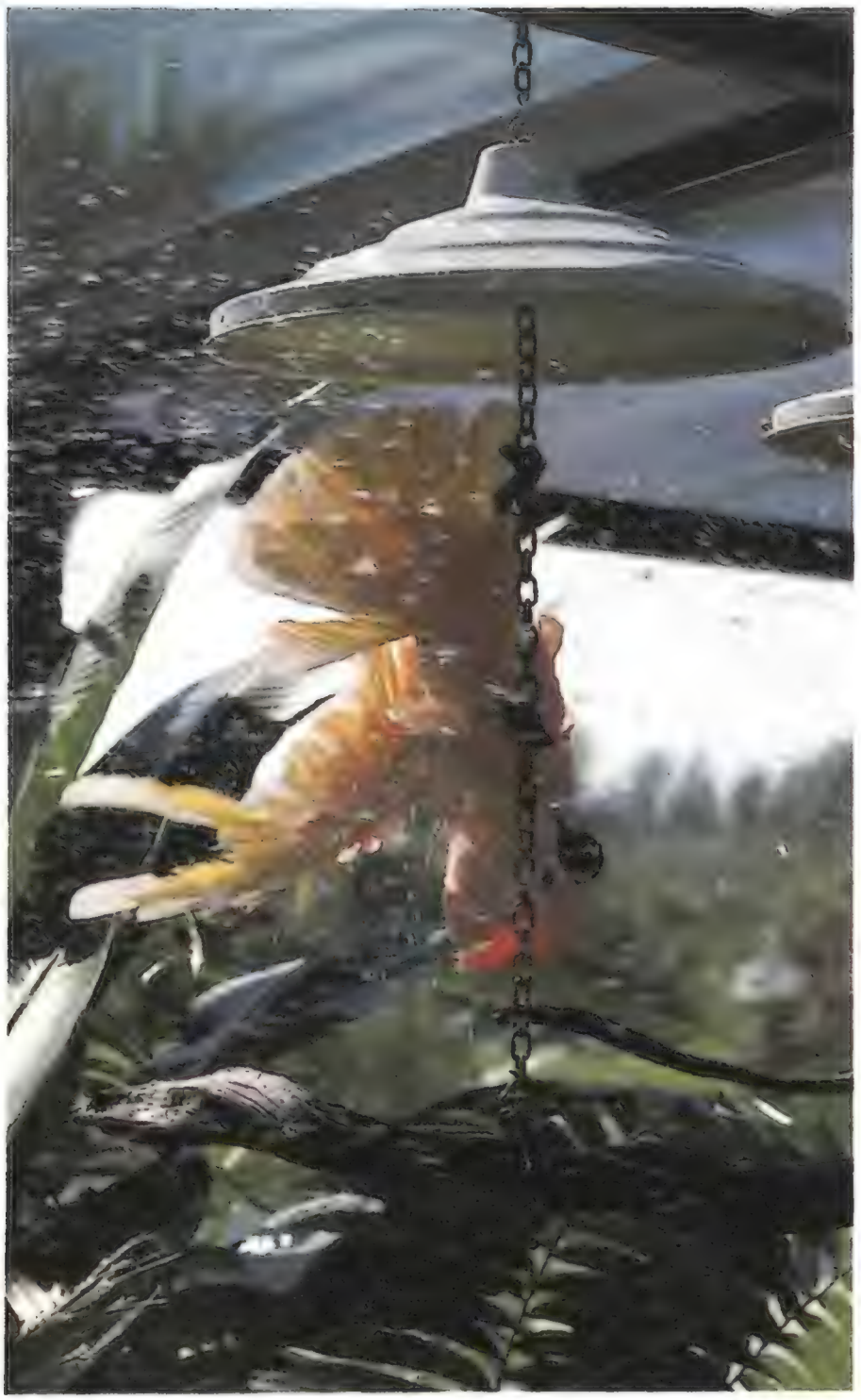
world's leading exporter of protected wildlife." In Bolivia blank CITES export permits were openly available; a dealer had only to fill in the blanks as he chose. Hyacinth macaws, protected in Brazil and uncommon everywhere else, were smuggled into Bolivia and illegally exported as blue and golds until U.S. officials refused to accept any more. The situation finally became so bad that in May 1984 the Bolivian government revoked the licenses of 13 exporters and banned all wildlife exports for a year.

A recent civil case illustrates the state of the effort to halt illegal parrot imports. One hundred highly coveted black palm cockatoos from Indonesia were brought into the United States by a pair of Florida importers who stood to make perhaps $500,000 on their sale. The trouble was that Indonesia prohibits the export of black palms for commercial purposes. The Florida people dealt through a wildlife broker in Singapore who exported the birds from Malaysia. U.S. officials seized the cockatoos as contraband and eventually distributed them to various zoos.

But can the illegal trade be stopped altogether? Conservationists and some federal wildlife agents complain that it is a low-priority target. Russell Train, president of World Wildlife Fund-US, charged not long ago that progress was "at a standstill." Meanwhile, the traffickers continue to do nicely. Three men operating out of Mexico reportedly cleared $55,000 in two recent weeks smuggling macaws and amazons.

Still, there are some hopeful signs. The Lacey Act, a law that makes violations of foreign wildlife statutes a crime here as well, has been beefed up by Congress. The World Wildlife Fund recently completed a compilation of applicable foreign laws that will help U.S. inspectors. Donald Bruning thinks that the black palm cockatoo case signaled a turning point in law-enforcement priorities. Six more countries joined the CITES treaty last year, and more than half of the nations in Latin America now prohibit wildlife exports. "The channels are narrowing, and that's probably the best we can hope for," says Edmund Glowen, a wildlife officer at the State Department.

"We're pragmatists looking for concrete solutions," Don Carr emphasizes. "Our job is to identify the traders who are guilty of the worst excesses and to try to make examples of them. You can't slay all the dragons, but you can send out the message that what's going on is intolerable." The parrots, screaming through the tropical forests in all of their gaudy glory, have been sending that message for years.



Pet Moluccan cockatoo at private home in Florida hangs upside down, in typical parrot fashion, to bathe.

Native to Indonesia's Moluccas, this fluffed-up cockatoo strikes the kind of pose parrot owners adore.

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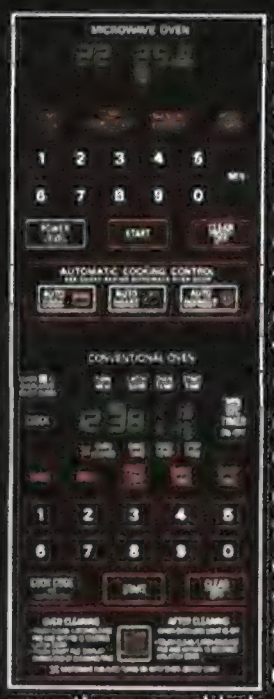

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A TRADEMARK OF GENERAL ELECTRIC CO.

By Timothy Foote

Once upon a time these stones marked the end of the civilized world

And the Emperor Hadrian's device for separating the Romans from the barbarians continues to astonish after 1,800 years

"Hop. Hop. Hop!" a piping voice calls out. "Look at me, Mummy! I'm a Roman hopping down the wall."

"Yes, darling," the English mother says, making a stately progress in her small son's wake, "but the Romans were ever so much quieter."

The boy's excitement is easy to share. On the wall, you seem to be on top of the world. Besides, there he is, zipping along the top of a piece of stonework 1,800 years old, where Roman soldiers used to march.

Hadrian's Wall is one of the wonders of the world. Its path runs right across the neck of Britain, 73 miles from Newcastle upon Tyne to the Irish Sea, past flat fields and over rivers, through churchyards and the occasional farm, up hill, down dale and, for about 20 spectacular miles, climbs along the rim of the high cliffs on which we stand. Behind us, the ribbon of ancient stones dips and rises eastward along a roller-coaster ridge toward the great fort at Housesteads. Ahead, the ragged, gray six-foot width of it swoops upward following a grassy hill line, and then suddenly drops off into nothing. A 19th-century quarry simply chopped the hill in half, gobbling up hundreds of yards of stone and history at a bite.

There is always wind on the wall, shivering the grass on these Northumbrian hillsides. Sometimes it roars in the ears like a subway train. Sometimes it softens to bring the faint baaing of sheep and, now and then, through some sort of mysterious skip-distance effect, the rumble of a lorry passing along the distant Carlisle road.

Here a sense of space seems to extend outward, and backward into history. The Carlisle road, for instance, was built after 1745, from stones pulled out of the wall, to help an English army maneuver against the diehard Scots under Bonnie Prince Charlie. And the wind is the same west wind that blew the troublesome Scots (the name *Scoti* meant raiders) out of Ireland and into what became troublesome Scotland. That was several centuries after Hadrian first ordered up the wall around A.D. 122. He was a new emperor then. There had been uprisings in the north, and Rome was overextended elsewhere. It had been an empire for 150 years, bogged down in Britain for 75. The wall, as Hadrian's biographer would put it, was to "separate the Romans from the barbarians."

Nowadays Romans tend to be dismissed as do-it-by-the-numbers boobs, like the forces so constantly diddled by the French comic-book hero Astérix le Gaulois. Imperial Rome is scorned as a kind of prototypical Fascist menace, mainly notable for militarism

Seen from near Housesteads, in winter, the wall makes a grim, sinuous progress across Northumbrian hills.

Photographs by Michael Freeman

Hadrian, on coin minted about A.D. 132, like other emperors was worshipped as one among many gods.

and orgies of cruelty and political usurpation. But after the carnage of the republican wars, and the chaos that prevailed elsewhere, the empire's *pax Romana* was a piece of good fortune for the world.

The idea of a wall has not fared well, either. Fixed defenses always fail, we think (see Maginot Line). And walls perversely try to pen up the human spirit (see the Berlin Wall). Besides, we have Robert Frost's word on it: "Something there is that doesn't love a wall." The Romans had no such notions. Hadrian's Wall did, in fact, dramatically confirm a shift in policy, from dreams of conquest to hopes of defensive consolidation. But the barbarian forces it was trying to hold at bay turned out to be the Dark Ages.

Barbarians? Sophisticated citizens back in Rome probably felt about barbarians the way middle-class American householders might feel about Canada if the population of our neighbor to the north were made up of hard-rock groups and street gangs, much given to blood feuds and mind-bending substances, entirely bereft of art, police or plumbing.

Rome had some reason for arrogance. In a Tower of Babel world, the empire could offer an official language, a single overriding structure of law, a system of standard coinage, weights, measures and distances, and a network of maintained roads that ran for 49,000 miles, all across Europe and beyond, from Hadrian's Wall to the Euphrates River. By Hadrian's time, some experts say, Roman aqueducts were bringing more health-giving water per capita to Rome than Cambridge, Massachusetts, gets today.

A Roman citizen could vote. A Roman citizen could hold office. A Roman citizen had rights and responsibilities under a complex and well-administered system of criminal and civil law. When Saint Paul was arrested in Jerusalem for being a Christian and a dissident, he shouted, roughly speaking, "You can't do this to me! I am a citizen of Rome."

But what the legions also brought, pretty much at spearpoint, taking a cut on everything from property and sales to imports and exports, was taxes. When recently Romanized provinces threatened to revolt, often as not it was because of the tax squeeze.

Taking Britain in the first place may have been an imperial blunder. The crippled Emperor Claudius went there in A.D. 43 to acquire prestige and the tin of the lowland south. But Rome wound up tangling with the Welsh, the tough Brigantes—who occupied the long hilly spine of Britain—and the fierce tribesmen of the north. Eventually it had to leave three legions—a tenth of the empire's total—permanently staked out in one tiny, recalcitrant island.

When Hadrian succeeded the warlike Emperor Trajan in A.D. 117, advantages won by earlier victories in Scotland had been thrown away, and there was little sense in trying to pacify all of Britain. Trajan had conquered Dacia (Romania) and thrust into Mesopotamia, where Rome had a precarious and costly grip. The empire's long and ragged northern edges near the Rhine and the Danube were restless. Hadrian was a dabbler in art and architecture whose sybaritic tastes are still evident in the exotic baths and fountains of the villa he built at Tivoli. But he had been a general and a provincial governor, and he had a firm grip on one of Rome's great patrician virtues—seeing ambition, not in the modern way, as a combined ego trip and personal scourge, but as a matter of public responsibility. He spent a good part of his reign crisscrossing Europe and the Near East trying to reform the sprawling empire. What could not be held (most notably Trajan's acquisitions in Mesopotamia) he had the wisdom to get rid of. But he looked to the long-term defenses of the rest.

"Little green olives for the watchtowers"

It was probably in Germany while he was seeing to the defense of the Rhine that he worked out plans for a British wall to be built by the legions. Part customs barrier, part architectural wonder and first line of defense, it would be an enduring symbol—and rugged proof of Rome's protective power.

He called for a width of ten feet, and (probably) a height of fifteen, with small forts every mile and lookout turrets every third of a mile. This was done apparently without much regard to the terrain, so that in

the central section around Housesteads, some of the milecastles ended up opening onto sheer drops from the cliffs. As a wall archaeologist put it to me, "You have to imagine Hadrian sitting at dinner down there in Germany somewhere, laying it all out just so, with big black olives for the milecastles, little green olives for the watchtowers, and maybe a string of pits for the wall in between."

It was to be no rigid Maginotlike line, though. It was part of a network of 30 forts, north and south. Hadrian's insistence upon military flexibility, and perhaps more important, his plan for the wall's use as a customs and police barrier controlling civilian movement, became clear when he modified the design.

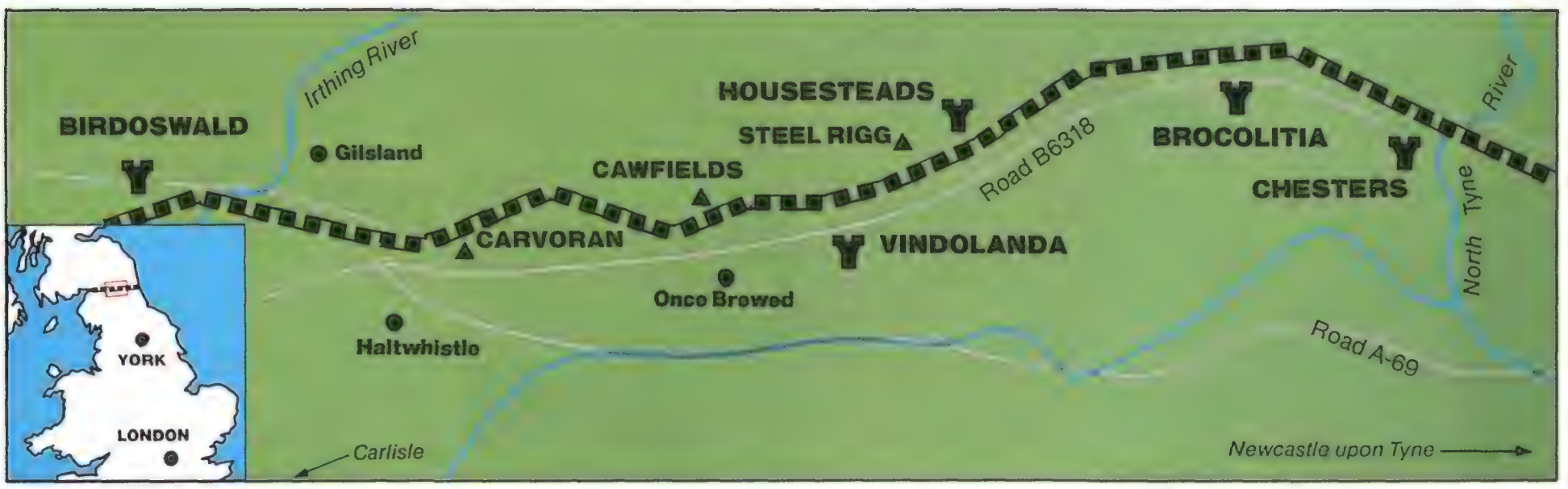
Hardly had the II, VI and XX legions surveyed the terrain, designed bridges for the North Tyne and the Irthing, and seriously got down to laying stone, when the emperor demanded drastic changes. No need for a wall ten feet wide--eight, or even six would do. The legions would also have to build 11 new forts right into the wall, each with large northward-facing gates so reinforcements from their garrisons could pour forth the moment trouble was reported.

The plan had always specified a traditional fighting ditch on the north side. Now Hadrian called for a 120-foot-wide earthwork to the south, in back of the wall, centered on a trench 20 feet wide and ten feet deep, with the excavated earth mounded up on both sides. This is the *vallum* (pp. 74-75), clearly meant to keep smugglers and local inhabitants away. Causeways were built across the *vallum*, but only at the forts.

The largest wall fort enclosed nine acres, and provided a base for 1,000 men. Like legion marching camps, forts were all laid out according to the same plan, around a central headquarters building (the *principia*), which contained a paymaster's office and a kind of chapel for storing the unit's sacred military standards. Forts held large latrines with room for 20 men at a time and plenty of running water, cookhouses, storage granaries, rows of slate-roofed barracks.

A modern visitor can get an idea of what these forts were like by looking at the low, fragmentary walls at Housesteads (p. 78) or Vindolanda or Chesters. Compared to Roman buildings elsewhere they do not seem startling. It is the wall itself, built without benefit of

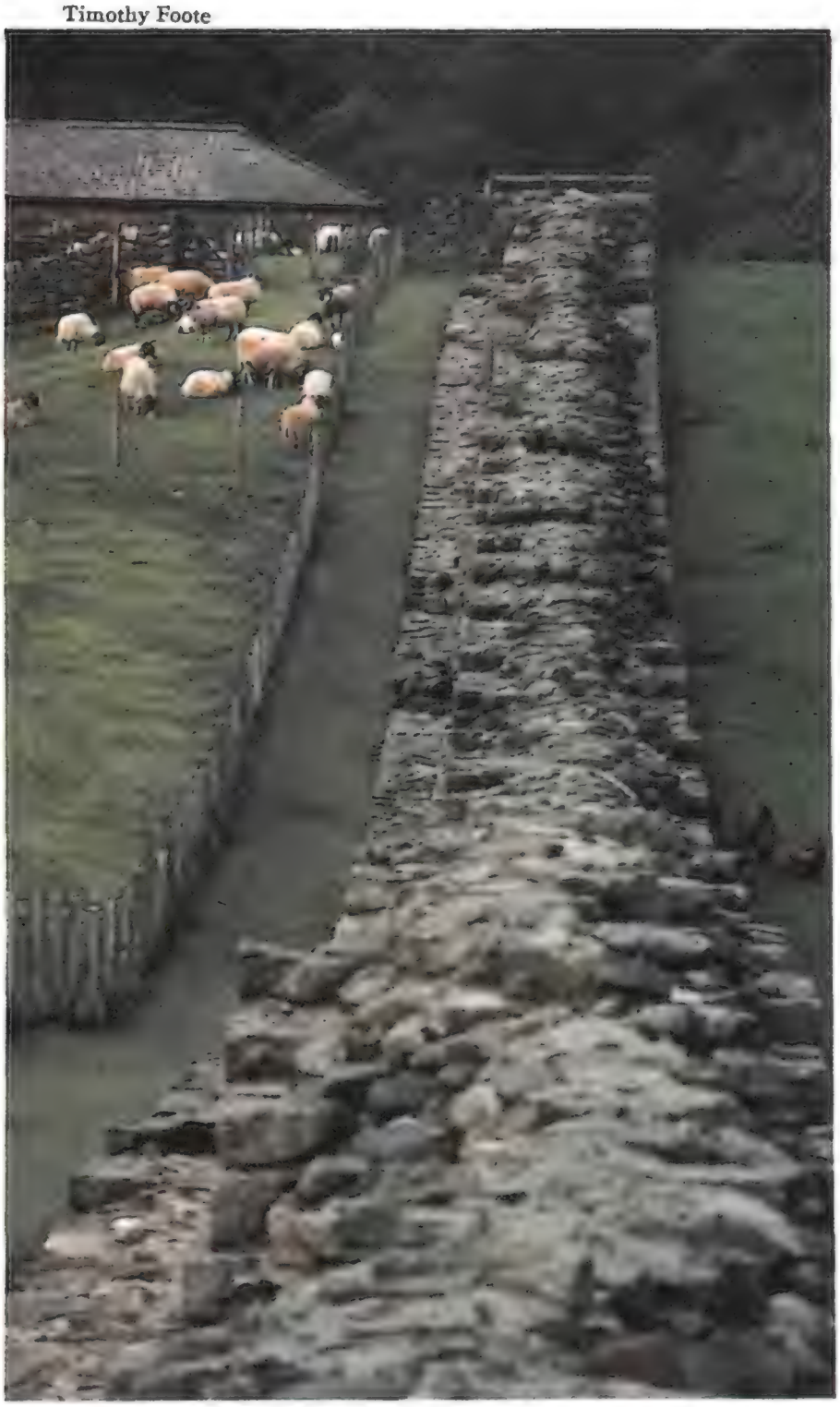
Mithras, a monotheist sun-god popular with Roman soldiers, holds symbolic dagger and lighted torch.



Map of the wall's spectacular central section shows towns, roads and the principal Roman sites to be seen, from the fort and museum at Chesters to the remains of Birdoswald, a fort just west of the Irthing River.

Hadrian's Wall, end of the Roman world

Timothy Foote



Passing through a farm near Gilsland, wall shows clearly where builders switched to a narrower width.

Hexham Tourist Information Centre

Near Cawfields an old quarry cuts off wall beyond ruin of Milecastle 42. At right is grass-grown *vallum*.

slaves (or bulldozers) that first stirs awe and curiosity, even in its present dilapidated and fragmented state.

Twenty-five million dressed and fitted stones, most of them at least as big as a modern electric toaster, some so huge that they could only be lifted with block and tackle. The outer shell of the wall stood 20 or so tiers of stone in height. Into the center was poured mortar, ton upon ton of rubble, earth and chunks of a splintery, unworkable local stone called "bluey."

In some places, east of Birdoswald fort, for instance, you can still see where the legions switched from the broad to the narrow measure (left). Each legion consisted of about 5,000 infantrymen and 120 cavalry. Legions were self-sufficient units, and their men doubled in more specialties (135) than Boy Scouts have merit badges. There were men trained in baking and bookkeeping, in carpentry, cobbling and plumbing, in music and medicine and signaling, not to mention the latest methods for conducting a siege.

But apart from fighting, what the legions did best was building. Men of the legions worked—as they marched or fought—at a regular pace, pretty much

An earthwork originally 120 feet wide and ten deep, it was probably made to protect rear approach of wall.

from sunrise until sunset, without weekends or holidays, except for special days devoted to religious festivals (including obeisances to the emperor), oath takings, award givings and (once a quarter) receiving pay. In Britain, starting in A.D. 122, the II, VI and XX sweated along at the remarkable rate of five to six wall miles and one fort per legion per year. And though the whole wall was not completed until after 128, in about three years much of the work was done.

Once completed, did the wall work? Was it, in terms Defense Secretary Weinberger's critics might examine, cost-effective? Like much else about the wall, such questions are impossible to answer satisfactorily.

Legions were expensive. Keeping three of them in the field for a year cost almost 8 million denarii, or roughly, experts say, the cost of buying 48 million loaves of bread! But stone cost Hadrian nothing and the legions were on the payroll anyway. It was their presence that made fighting rare, beyond a punitive raid now and then, and when not fighting, the legions, like all soldiers, had to be kept busy.

The wall's clear military purpose was as a deterrent, and its psychological effect must have been considerable. Imagine what it must have been like to approach from the north, this grim, damnable, never-ending, somehow ultra-Roman thing, an awesome creation quite beyond the experience or the imagination of any tribesman. You can get the feel of that by walking north across the fields beyond Steel Rigg or Housesteads fort just before dark, and looking up at it.

Bearded barbarians storming the battlements

By and large, between A.D. 128 and 410, when Roman power finally evaporated from Britain, the island was much more calm than continental Europe. Several times attacks seem to have been made on the Roman forts north of the wall, and on the wall itself —most likely when rebellious Roman leaders took troops from the island to Gaul, and farther, in attempts to become emperor themselves.

It used to be believed that at least once, in 367, the wall was completely overrun. Nineteenth-century-style illustrations show skin-clad, bearded barbarians pouring over the battlements, and flames leaping skyward. But there is fairly little literary or archaeological evidence to prove the extent of these attacks. The destruction of at least some of the forts north of the wall now appears to be the work not of barbarians but of the Romans themselves, as they systematically abandoned forward positions.

Rome was in steady decline, though, coming apart from within and pressured from without by tribes migrating westward from the steppes of Asia. They pressed upon tribes in central Europe and Germany, and probably were the main reason why the Saxons kept raiding Britain across the North Sea. Without the wall, whatever raiders there were would have had an easier time of it, and disruption of orderly life to the south would certainly have been greater.

Even with the wall, Rome failed in Britain—or, as it might be seen, the British tribes failed to profit from what Rome brought. Roman ways left little imprint on the island and Britons seem to have learned almost nothing about plumbing, tools or practical architecture. Ironically, just about all that survived of what Rome brought was the spark of Christianity, and a tenuous linkage, broken a millennium later by Henry VIII, with the Roman Catholic Church.

We know the wall was built by the legions because they signed their work in stone. But contrary to popular belief—and this is a misapprehension that particularly seems to gall wall experts today—the wall was manned not by legions but by auxiliaries, 10,000 of them, special forces including infantry, cavalry, spearmen and bowmen from all over the empire.

We used to imagine them, alien and cold, clad in-

Robin Birley, at Vindolanda which he excavated, has done much to translate history into human terms.

adequately in leg wrappings and hobnailed sandals, gazing north but dreaming of Syria or Egypt, of Africa or Spain, and longing "for a beaker full of the warm South." Evidence suggests, though, that they tended to stay on and on, that they often married and retired where they were stationed, and sent their sons into the same outfits they had served.

In a sense such units were like the public schools which prepared immigrant children for citizenship in 19th-century America. Besides the pay, what an auxiliary really worked for and what it took as much as 25 hard years of military duty to earn was a bronze plate known as a "diploma." It had his service record chiseled on it. And it meant that any marriage he had made would be recognized under Roman law. More important, a diploma entitled him and his children to the honor and privilege of Roman citizenship.

A settlement that grew up outside a fort was called a *vicus*. In the centuries that the wall was a defensive outpost of empire, what with all that army pay going out, with all the goods and services, bathhouses and grogshops, the wall doubtless became a lively place. In a splendid story from *Puck of Pook's Hill*, Kipling describes it as "a vast town—long like a snake, and wicked like a snake. Yes, a snake basking beside a warm wall."

Kipling is describing the wall about A.D. 383 when Maximus, one of three leaders who at various times took troops from Britain's wall in an attempt to make themselves emperor, is off fighting the Emperor Theodosius. Admittedly the wall, like the Roman empire itself, was more or less going to hell. But even so, the archaeological experts say, Kipling was wrong. Settlements that grew up along the wall were permitted only in dense clusters close around the forts.

Knowledge of life on the wall derives in part from a considerable understanding of how the Roman army operated in dry climates, where more writing has survived. In England, scholarly investigation has drawn heavily on epigraphy, the examination of about 1,200 inscriptions carved on buildings and statuary offerings to the gods around the wall. Most are written in rather enigmatic Latin abbreviation. *LEG VI VIC P FIDELIS F*, for example, really means *LEGIO VI VICTRIX PIA FIDELIS FECIT*, "This was built by the faithful and pious VI Victrix legion."

Coins (more than 100,000 have been found along the wall) help fix dates of emperors and victories. So do other excavated artifacts, from bushels of hobnails and spearheads to pieces of glass (it is a surprise to learn that forts and milecastles enjoyed glassed-in windows) and on to touchstones of wallography like the Rudge Cup, on display at Alnwick Castle (SMITHSONIAN, August 1984), with a decorative frieze suggesting the wall was crenellated.

The most arcane study that is appropriate to reconstructing Roman history is something called prosopography. It consists in trying to follow individual careers, methods of promotion and movement around the empire by studying names. Essays by Eric Birley, one of the most celebrated wall scholars, make absorbing reading. Most Roman citizens had five names, starting with a *praenomen* and a *nomen* (as in Marcus Flavius) and moving on to names that mean "son of such and such a father," and names revealing tribe and even place of origin. The bad news for any layman trying to follow Professor Birley is that Rome was constantly turning non-Romans into Romans—a good thing politically, but a prosopographical disaster. New citizens usually took new Roman names, starting with *praenomen, nomen* and tribe borrowed from the emperor then reigning. And sometimes block grants of citizenship were given to whole cohorts of auxiliaries for bravery in battle.

To get an idea of the problems involved, imagine trying to study the careers and origins of professional football players—with little more than the names to go on—if the Superbowl involved, say, 500 rather than 98 men, and each year the players were permanently renamed after the winning coach. You soon might be overwhelmed by legions of virtually indistinguishable Don Shulas and Vince Lombardis.

Information keeps accumulating about the everyday life of the wall. There were elaborate communal

The author, a member of the Board of Editors, has walked Hadrian's Wall. Recently he has written about peacocks, golden retrievers and the Washington Post.

Hobnailed boot, finely wrought spoon and necklace show high-quality workmanship and design. Men recruited in the north were larger than Romans; one pair of boots found at Vindolanda was size 12.

bathhouses, complete with hot, cold and even tepid water, plus a room with hot air and one for being rubbed with oil. These, as you can see at Chesters, down beside the North Tyne, were kept outside the fort, no doubt because heating caused a danger of fire.

Burying grounds, too, for soldiers as well as civilians, were naturally outside the forts. Burials were expensive; to finance them soldiers joined burial clubs and had money taken out of their pay, along with deductions the government took anyway to pay for clothing and equipment. Sometimes when a baby died, the grieving parents secretly buried it at home, in a pot in a shallow grave under layers of ferns, bracken and twigs that carpeted the dirt floors.

There were many gods, but, at least until Constantine made Christianity a legal religion in A.D. 311, Rome was tolerant. Provided a Syrian archer or a Belgian cavalryman saluted the military standards of his unit and did his duty by a handful of official religious days and deities, he was free to make offerings as he wished. Many were to Jupiter and Mars, of course. But along the wall, statues and altars were often dedicated to a mysterious trio of mother goddesses, "to the genius of the place"(*Genio Loci*), and to *Vitiris*, a mysterious deity rarely recorded elsewhere in the Roman empire. There was also a popular army cult of Mithras, a new, monotheistic religion out of the Near East that involved the sacrifice of a bull, stressed the need for soldierly courage and competed with that other new religion, Christianity, by emphasizing redemption and offering hope of immortality.

"Low-standing ruins by themselves," says Robin Birley, "do not have much appeal to the young. You must publicly portray the human story." Robin is 50 and the son of Professor Eric Birley. He is also the man who more than any other has tried to popularize Roman life on the wall in ways that modern audiences can understand. And it is true that these ancient stones live only if you have some grip on the history and the people. I remember a middle-aged woman trying to urge a sulky, preteen girl along the breathtaking vista of wall near Steel Rigg. "I *know* it's 2,000 years old, dear," the woman said desperately, "but bits of it are terrific."

You can sometimes sense the Romans best in the musty museums at Chesters and in the city of Carlisle, where jumbled rows of statues stand, a few of them life-size, shaped and dedicated to gods and goddesses, but mainly in mournful memory of the dead—a faithful wife, a comrade killed in battle, a child. At Carlisle you also learn that on the march the tents of legion officers had floors—and couches! The men slept in tents called "butterflies" (*papiliones*), because, packed up, they formed a caterpillarlike roll, but when unfolded, their flaps spread out like wings. You admire tools: chains, axes, mattocks, minicrowbars. And the fine work of tiny clasps, even a set of handcuffs.

At Vindolanda, a fort, a partly excavated *vicus* and a museum about a mile south of the wall, considerable effort is made to popularize information. Today Vindolanda is run as a trust, but since 1929 it has belonged to the Birley family (the third "wall" Birley is Robin's brother Anthony, an author of books about Roman Britain, and a professor at the University of Manchester). At the entry are souvenirs, Roman recipes (including ham in pastry with fig sauce) and picture-puzzle books full of details about the gear and training of the Roman army.

Inside, paying visitors get to watch a tableau moment in the life of the "Marcus family," in a frontier house complete with a sound track (bugles call husband-and-father Marcus to the fort) and voice-over

Low ruins at Housesteads fort seen from northwest. Fort enclosed five acres, included barracks, granaries, latrine with running water. For 200 years it served as base for the first cohort of Tungrians (Belgians).

commentary. Along with the canned birdsong, the stuffed dog, the plastic mother, Marta, cooking with cumin seed, there is an impressive density of detail: the bracken on the floor, orangy-red Samian pots and cups from Gaul (somewhere near Vichy), the wine, the fish sauce imported from Portugal.

Farther on you see displays of combs, heated curling tongs, and coins bearing the heads of empresses. It is curiously touching to learn that these imperial matrons served as fashion plates for women living on the wall, and indeed in any remote spot in the empire, because there were no other hairstyles to copy. The displays make clear that research suggests Roman soldiers, long regarded as largely vegetarian, actually ate a lot of meat—at least to judge by the bones found around the Vindolanda *vicus*. I note the bones of a horse on display and the poleaxed skull of an ox. "Did the Romans *kill* it, Daddy?" a tiny boy asks, clearly shocked and holding his father's hand. "The Romans *used* it, Nigel," the father replies.

Pièce de résistance at Vindolanda is a display of blowups and translations from one of the most important finds ever made, 202 fragments of wafer-thin wooden notebooks, with still-readable writing on them in ink. Robin Birley and a digging crew of young volunteers found them in 1973 in a flooded drainage ditch beneath Vindolanda's *vicus*. The writing turned out to be personal letters, soldiers' work assignments, clerks' lists of food and drink. Since no other writing exists about life in the wall area, these proved a treasure trove. In one letter a mother writes that she is sending underwear (*subligaria*), once and for all proving (the issue seems to have been in question perhaps because we are so near Scotland) that soldiers on the wall *wore* underwear.

Among the food and drink listed: Celtic beer (*cerusa*), vintage wine (*vinum*) for officers and special festivals, and (literally) sour wine (*acetum*) for enlisted men, fish sauce (*muria*), pork lard (*axungia*), young pig, ham, roe deer and venison.

Birley, who once taught at Gordonstoun, the spartan school famous for having Prince Charles as a student, and who likes to think he's responsible for the fact that the Prince read archaeology at Cambridge, did not spend the rest of his life working in wet trenches. Until recently he was the controversial head of the

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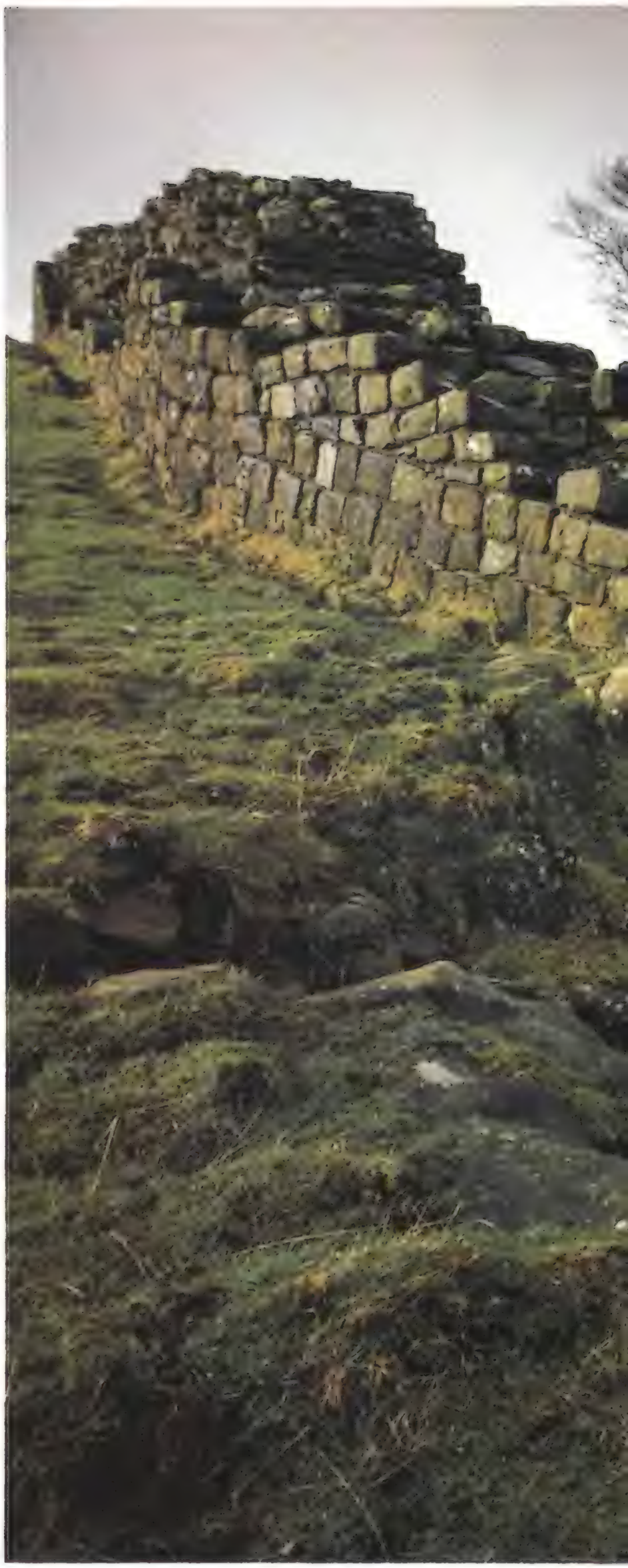
Northumberland County Council, and among other things he is pushing a plan to create local jobs and draw more history-minded tourists by establishing an archaeological park beside his home, near Carvoran. Here he wants to rebuild a section of wall. The Department of the Environment (DOE), which tends to be conservative and has protective custody of the wall, does not approve of reconstruction, but Birley hopes to get around that because his site has no archaeological remains to interest science. It is a huge quarry where 500 yards of wall were cut away.

If he gets his way, visitors will be able to look at and walk along as near a replica of the wall in A.D. 300 as possible, 21 feet high including the parapet, with observation posts and a milecastle. Birley, who directed schoolchildren in the building of a short replica section of wall at Vindolanda, and regards such work as the best way ever of teaching history, reckons that his new project would not only provide 70 permanent local jobs—in job-scarce Northumberland—but should generate income to support more archaeological research.

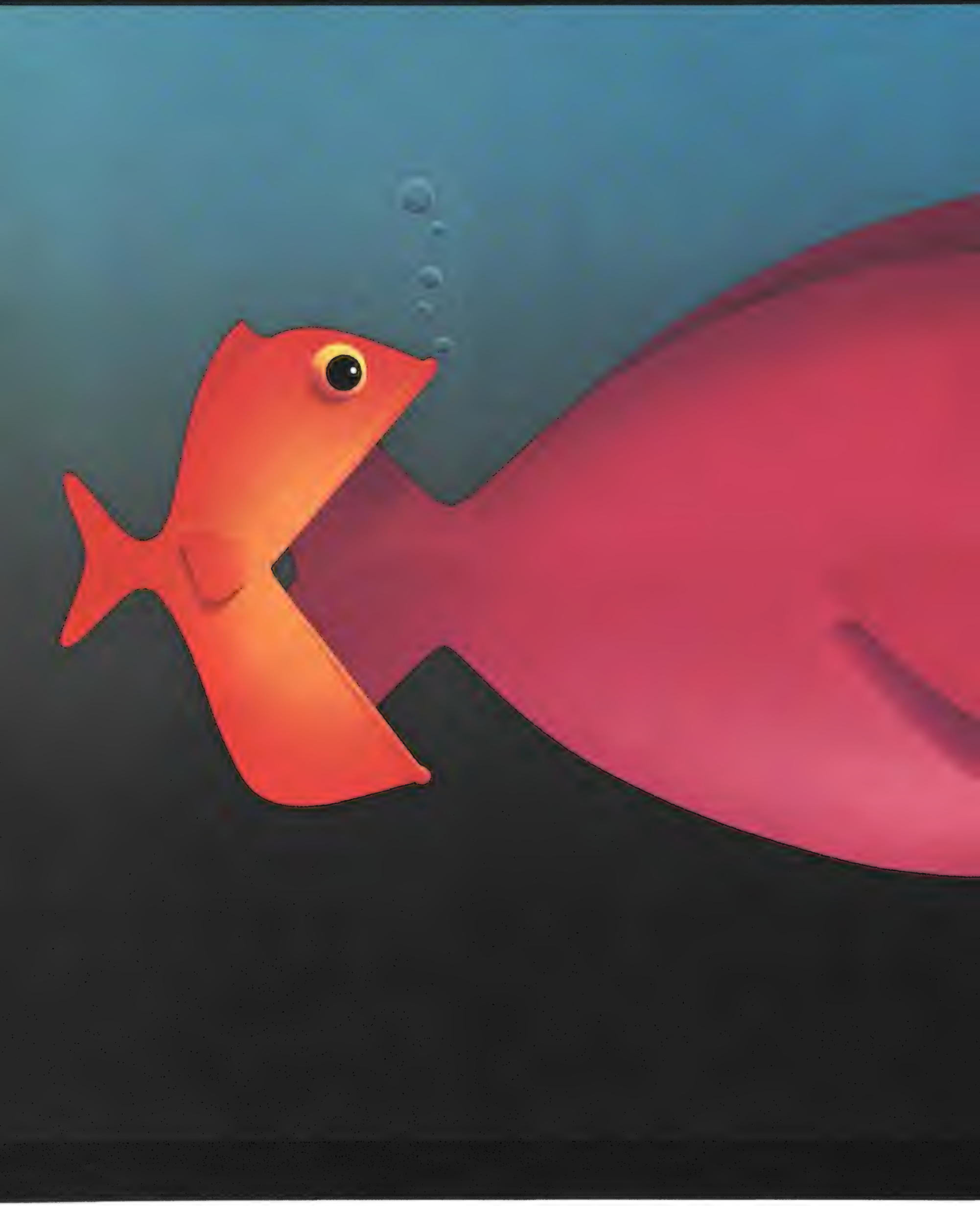
That would certainly please other archaeologists, who agree with Birley that most of the forts and most of the wall have so far barely been touched, while basic questions that digging could answer are left to pure speculation. Today even controlled and responsible digging is clearly hampered by government restrictions and lack of cash. Consider James Crow, who directs archaeological studies on the wall under the aegis of the DOE and the National Trust. Though his work is now funded by the DOE, over the years funding has often been sporadic and he constantly seeks support for future projects. "There have been times," he says, "when it was almost literally 'Drop your trowel, there's no more money.'" Nevertheless, there are those in Britain who feel that Birley's proposed park might prove more suitable to Disneyland than to Northumberland.

The number of visitors along the wall increases steadily; some estimates go as high as 500,000 a year. "What I worry about," a young archaeologist said to me, "is the tramp, tramp, tramp of all those boots."

The danger of destruction is not new to the wall. According to some experts, after barbarian attacks the faithful legions had to make heavy repairs on it three times between A.D. 200 and 410, when the exhausted Roman empire in the West finally withdrew all support. But these days, where the wall is concerned, the Romans and the barbarians are one.



Near Walltown, well-worn stones climb westward up a hill. Beyond lie fields leading away toward Scotland.



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continued on next page

continued from preceding page

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A handful of companies are rewriting the business school casebooks by using information systems to gain a strategic advantage.

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Business imperatives have a nasty way of evolving right out from under expensive, just-installed systems.

industries.) In our opinion, too many companies keep their "Systems" people and their "Business" people in separate, watertight compartments.

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When you've got to be right.

By Orville Schell

His guitars for the stars are there for the pickin'

Luthier Danny Ferrington's instruments are works of art—but it's their sound that wins musicians like Linda Ronstadt, Johnny Cash

Ferrington holds one of his guitars in his studio where wall is covered with particle-board templates.

Health buffs on their way for a workout at the Lifeplus Dance and Exercise Studio in a commercial section of Santa Monica, California, are sometimes surprised to see a man shinnying up a rope dangling down the side of an automotive paint store, and then slipping through two double doors into a garret.

The figure is neither a Spiderman trainee nor a thief on the prowl but Danny Ferrington, one of the country's most respected luthiers, or guitar makers, going to work.

On weekends or after hours, when Ferrington often likes to work, the Santa Monica Automotive Colours shop, over which he rents his space, is closed, blocking off the staircase. Ferrington, much to the bemusement of passersby, has solved the dilemma of ingress and egress with a rope which hangs out a loft door.

Ferrington is as unorthodox about making guitars as he is about getting into his workshop. Instead of being the stereotypical Old World craftsman one might easily imagine—elderly, with wire-rimmed glasses, a beard and wearing a leather apron—Ferrington is young (32 years old) and dresses in jeans and T-shirts.

Rather than working with costly antique implements, Ferrington announces with pride that all his tools are inexpensive—in fact, bought at Sears. He tells you with pleasure that he purchases all his paints and sealers from the auto shop beneath his work place and that he has no compunction about using power tools to craft his instruments. "I don't believe in using hand tools exclusively," he once said. "There's no room for brown rice or granola on any of my guitars."

Indeed, when Ferrington works he goes at the task with such vigor that he often appears to be indelicate. When he begins to shape a piece of wood for the neck of a guitar, he fairly attacks it with a huge rasp that looks rough enough to belong to a farrier.

Ferrington is also garrulous. As he works, he is such a nonstop fountainhead of information, insight and stories that one has the feeling of being accompanied by the kind of recorded cassette lectures that are available for rent with earphones at art museums—except that Ferrington's commentary is delivered with a Southern twang, a legacy from his native Louisiana.

Although he stands only five-foot-six, Farrington is bullishly strong. He has rarely met his match in arm wrestling, and I have seen him climb a 40-foot pine tree without branches in a matter of seconds. He almost never associates with other instrument makers. Instead, he can be seen hanging out in Westwood Village at Lamonica's New York Pizza parlor, which he has come to refer to as his salon, or cruising around Brentwood and Santa Monica wearing a throwaway painter's cap with a cardboard brim.

Ferrington's shop is as unpretentious as the man who works there. The telephone was disconnected a

Double-neck bass guitar made for Leland Sklar is ablaze with tinted mother-of-pearl "hot-rod flames."

Photographs by Baron Wolman and Danny Ferrington

Louisiana luthier thrives in L.A.

Although they lead independent lives, Ferrington and Linda Ronstadt do find time to have tea together.

Ferrington has to climb a rope to get into his studio when the automotive paint store downstairs is closed.

year ago and he's never bothered to have it hooked up again. ("I may lose some business," he says with a shrug.) A rather insubstantial-looking workbench is littered with scraps of wood and hand tools. To one side there is a band saw, drill press, horizontal sander and an air compressor. On one wall hangs a Ditzler Automotive Finishes calendar showing a woman in a bathing suit standing next to a Corvette. Were it not for the particle-board templates—with which Ferrington shapes the sides of his guitars—hanging on the back wall, one might never suspect that this modest workshop has produced instruments for the likes of Johnny Cash, Lindsey Buckingham, Jackson Browne, Leo Kottke, Linda Ronstadt, Eric Clapton, Emmylou Harris, Ricky Skaggs, Crystal Gayle, Waylon Jennings, Elvis Costello, Peter Townshend, J. D. Souther and Hoyt Axton, to name a few.

"I grew up in Louisiana in a small town called Enterprise," Ferrington tells me one day as we zoom down the San Diego Freeway in a Porsche belonging to singer Linda Ronstadt, with whom he now shares a house in Los Angeles. "In Louisiana our place was nine miles off the paved road, had no running water and no telephone. The nearest neighbor was two miles away, and we had to ride a ferryboat to get to school. We always had a tightly knit family. At one point, I had 12 grandparents and great-grandparents all alive at the same time."

The framed watercolors of ordinary kitchen objects that hang on the walls were painted by Ferrington.

Inlaid mother-of-pearl bunnies and blossoms decorate Ronstadt's "baby" (smaller-than-standard) guitar.

Ferrington's first experience working with wood came from helping his father make cabinets in the family shop after school. His father also played the guitar and bought Ferrington jr. his first instrument when he was 12. "From the moment I got that guitar, I was always wanting to tinker with it," he remembers. "Then I got to playing bluegrass on the banjo and hanging around this old guy, Doc Savage, who fixed guitars in Monroe. After a while, he began to let me actually work in his shop refinishing guitars."

In college, Ferrington took a general business course. "I hated it!" he recalls, squinching his face and furrowing his brows so that his normally cheerful demeanor suddenly becomes transformed. "I really didn't know what I wanted to do, but it wasn't business. All I knew was that I could make cabinets and had a way with wood."

When Ferrington heard that the Old Time Pickin' Parlour in Nashville, Tennessee, a vintage acoustic-guitar repair shop and an after-hours bluegrass club, was looking for an apprentice guitar repairer, he jumped at the chance.

"They were offering $2 an hour. But that didn't bother me," Ferrington remembers with a laugh. "Heck! I'd been reading in my bluegrass magazines about all the famous stars like Vassar Clements, Roy Acuff, Charlie Collins and Bill Monroe who used to go over and play there after the Grand Ole Opry, so I was eager. When I actually got up there, I felt as if I had gone to bluegrass heaven."

After arriving in Nashville at age 23, Ferrington also started working with Randy Wood, the famed acoustic-guitar maker. "I learned almost everything I know about wood from him," he recalls reverently. "That man had a kind of magic when it came to wood, and he was generous with his knowledge."

Ferrington's first guitar was made for singer-songwriter Paul Craft, who has penned such hits as "Keep Me From Blowing Away" and "Midnight Flyer." "I said to him, 'Hey Paul, I'll tell you what. I'll make you one and if you don't like it, you don't have to pay for it.' Well, he just loved that guitar, and after that things started snowballing for me.

"After being at the Pickin' Parlour for five years, I began to get restless," he continues as he turns off the freeway and heads toward Brentwood. "By that time, I had made guitars for every hillbilly with money—and some without. I had learned how to good ol' boy with the best of them. But in my work, I had come to a dead end. I needed to try something new."

In 1980 he left for Los Angeles, where he moved in with Linda Ronstadt, whom he had first met at the

Orville Schell's most recent book, To Get Rich Is Glorious: China in the 1980s, *from Pantheon, is based on a series of essays for* The New Yorker.

Reinforcing braces, set crisscross on soundboard, are held in place by assorted clamps as glue dries.

Ferrington uses chisel to finish shaping soundboard of a guitar for celebrity nutritionist Robert Haas.

Pickin' Parlour through Craft. Of his relationship with Ronstadt he says matter-of-factly, "She is my very good friend, and that's that."

Far from being overwhelmed by Los Angeles and his new home, Ferrington thrived. "A lot of people thought that a country boy like myself would hate the glitz and smog of L.A.," he says, smiling. "But I love it! It's still sweet to me."

As we swing through the radio-controlled gate of Ronstadt's house he adds complacently, "Besides, the climate here in L.A. is just perfect for making guitars. In Nashville we sometimes had two weeks with 100 percent humidity; here in L.A., when I make an instrument, the glue doesn't start cracking just as soon as the weather changes."

We settle down in the kitchen, which serves as a gallery for another kind of artwork. Ferrington is also an avid painter. All around the walls hang watercolors he has done of interiors and everyday kitchen objects. They are finely and beautifully rendered. Over a cup of tea, I ask Ferrington what makes him unique as a luthier. "One of the things I've tried to do is to push acoustic guitars out of the traditionalist rut in which these instruments seem to have been languishing forever," he replies. "I like to experiment not only with their sound but with their physical shape, so that each guitar will be as unique as the musician who is going to play it."

Indeed, Ferrington's guitars, which usually take between two weeks and a month to make and cost from $2,000 to $3,000, are all completely different in size, shape, tonal quality, inlay pattern and finish. He prides himself on making the "right" guitar for each customer. "For me, making an instrument is a collaborative process with the musician who is going to play it. I'm not interested in making the same guitar over and over again."

"Most musicians are on a constant and seemingly endless quest to find an instrument which best suits them," Ferrington continues. "For instance, Eric Clapton, who bought two guitars from me, already had about 60 other instruments. People like that have ideas about what they want. My job is to interpret those ideas and make them reality."

What actually goes on during the process is hard to describe. "When Danny makes a guitar, it ends up being personalized for the musician not only in the way it sounds but in the way it looks," says Linda Ronstadt, who already owns two Ferringtons and is about to get another. "Somehow he is able to dream your guitar into shape, color and sound, so that it not only responds to you but is in a sense an extension of your personality. He makes instruments which actually *look* like the people who own them. When he did one for Waylon Jennings, for instance, it was huge, black and angular. I mean it *was* Waylon Jennings!" She gives an enthusiastic laugh at the thought.

"There is a unique tactile thing about each piece of wood," says Ferrington. "You have to form an individual relationship with that piece of wood almost as if it were a person. Without that sense, an instrument maker is little more than a furniture maker. His guitars will have no character or soul. They won't talk to musicians when they are played."

Sitting there in the kitchen, Ferrington turns on an MTV channel to watch a video of Prince's new album —and begins to speak of Stradivari. "Stradivari made maybe 1,000 violins and cellos and a few violas and

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guitars. And do you know something? Every one was different. Stradivari didn't use any formulas. Actually, no one quite knows what made his stringed instruments so great," continues Ferrington, apparently unself-conscious about comparisons between himself and the legendary Stradivari. "Almost every year you hear a new theory. But I think they all miss the boat. Stradivari just had a wonderful but unanalyzable ability with wood. That's probably why no one has been able to copy him."

One of the most important determinants of an acoustic guitar's sound is the way the vibrating strings cause the wooden top of the instrument to resonate with them. Because the top, or soundboard, is so very important, most luthiers use spruce, which is both strong and porous, allowing the sound not only to vibrate it and radiate from the front, but to pass through it to the inside of the instrument as well. There it bounces back off the sides and the back—made of hardwoods like rosewood, which do not easily vibrate—and issues forth again from the circular hole in the guitar's center.

The thinner the top, the more resonant the instrument. However, since the taut strings exert enormous pressure on this frail surface—as much as 600 pounds of tension—guitar makers must reinforce all instruments with slender braces, which act something like the ribs of a wooden boat. But these braces can also dampen sound. In no small measure, the art of guitar making is in knowing not only how thick to make the sounding board, but also where to place these braces and how strong to make them.

"There is no rule for bracing," says Ferrington. "After I see how thick the sides are going to be and how big the top of the guitar is, there is just something that impels me to make the bracing a certain thickness."

Acoustic guitars are hollow, as distinguished from electric guitars which are solid and create sound by electronically amplifying the direct vibration of the strings rather than the vibrations from the guitar body. They have traditionally been made symmetrical like other stringed instruments because this enhances the volume. When plucked, a string vibrates to the pitch to which it has been tuned, and also sets off a series of overtones. These extra tones sound natural to the human ear, but when recorded create difficulties for sound engineers.

"The problem with a perfectly symmetrical acoustic guitar is that when you record it, you get a muddy sound which is usually too 'bassy,' " says Ferrington, picking up one of his own guitars and striking the low E-string. "Studio engineers have to doctor the sound up electronically by equalizing it, or enhancing the treble and muting the bass. But what I have found is that by distorting the instrument's shape and making it asymmetrical, I can cut out these extra tones and get a much flatter or purer response. As a result, most recording engineers just love my acoustic guitars."

For Ferrington, the discovery of asymmetrical construction also opened the door to the possibility of being able to create instruments which were visually more interesting as well. The only guitars which had broken through the traditional "hips," "waists" and "cheeks" design were solid electrics—completely dependent on electronic amplification for their sound. Ferrington found that he could make good acoustic guitars which were also unorthodox in shape. He began to produce instruments with straight edges, square

Star Wars creator George Lucas is shown "kid-proof" construction of small guitar made for his daughter.

Singer-songwriter J. D. Souther and Danny strum a tune together on their Ferrington-crafted guitars.

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Total Points	21	18	14	11	11	9
Acceleration 0-60 (sec.)	4 (6.00)	6 (5.33)	1 (7.95)	3 (6.43)	5 (5.95)	2 (6.66)
Braking 60-0 (ft.)	6 (129.2)	3 (135.7)	4 (135.2)	2 (143.1)	1 (144.7)	5 (135.1)
Slalom (sec.)	6 (6.13)	3 (6.38)	5 (6.33)	4 (6.36)	2 (6.40)	1 (6.62)
Lateral Acceleration (g's)	5 (.91)	6 (.92)	4 (.86)	2 (.83)	3 (.85)	1 (.82)
Price as Tested	$26,703	$103,700	$26,121	$60,370	$50,384	$49,495

Scoring based on an Olympic system in which first place is awarded 6 points for each event. USAC certified tests, January 1985. All cars listed were latest models available for sale in the U.S. at time of testing and were equipped with various high-performance options. Corvette's Manufacturer's Suggested Retail Base Price is $24,891 including dealer prep. Tax, license, destination charges and optional equipment additional.

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corners, elliptical curves, cutaways and a host of other uncategorizable configurations.

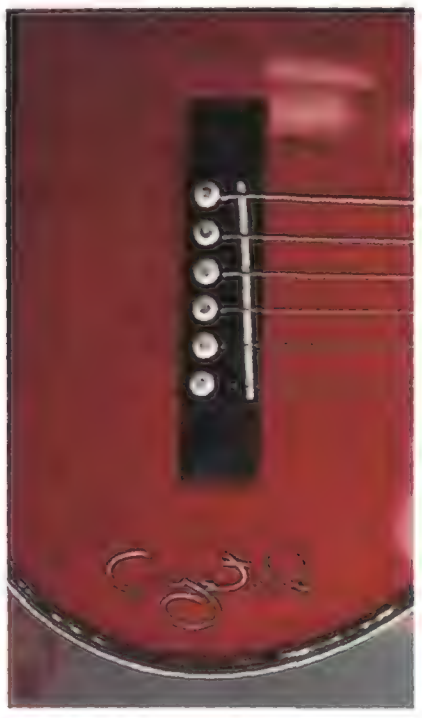
"I think the design of an instrument should be as pleasing as the sound," proclaims Ferrington. "They should be like old Cadillacs—beautiful, but still capable of getting you there."

Following his own admonition, for the English rocker Elvis Costello he made a midnight-black guitar which looks as if its design had been borrowed from Georges Braque or Pablo Picasso. He made another for singer Carlene Carter, which looks as if it had been squashed by something very heavy, as a stovepipe might be bent out of shape by too much weight on top of it. And for Waylon Jennings he built a guitar with a cutaway at the bottom which made it look as if someone had taken a bite out of it.

Another Ferrington innovation is an acoustic guitar which feels and looks like an electric guitar—except that it is hollow. "I wanted to try and get all the electric rock and rollers back into acoustic guitars, which these musicians had been treating as if the instruments had leprosy," says Ferrington with a smirk. "So what I did was to make an acoustic which was styled after an old electric Gibson Explorer—really an outrageous shape for an acoustic. And when I finally got finished with it, it sounded great. So I took it to some rock and rollers and said, 'Here, have a try.' They just loved it! So, now at least, I proved to them that just because you have an acoustic doesn't mean you have to play a folk classic like 'Puff the Magic Dragon' all night."

Ferrington is also a master at inlaying and finishing his custom guitars in unique ways that leave his customers ecstatic. For actor and country singer Hoyt Axton he recently made a traditional-style acoustic inlaid on the neck and top with 15 angels, all pains-

Clockwise from upper left, Little Jimmy Dickens so admired Waylon Jenning's Ferrington-made guitar that Jennings ordered him a replica with inscription. Crystal Gayle's signature is cut mother-of-pearl, and Johnny Cash's eagle is inlaid with silver and gold. Elvis Costello plays this small acoustic on the road.



takingly cut out of mother-of-pearl with a jeweler's saw and routed into the woodwork.

When Ferrington made Kathy Valentine of the Go-Go's a guitar, he inlaid it with the same heart and crossbones that she has tattooed on her arm. Then he helped her choose the right color red for the finish by going with her to a drugstore in Hollywood to pick out her favorite shade of lipstick. For J. D. Souther, who is from Amarillo, Texas, he crafted a black guitar with pink binding (trim) and a head stock shaped like the Lone Star State, with a mother-of-pearl star on the Panhandle to mark his hometown. Ferrington made singer Johnny Cash a guitar with gold inlays on the top. ("This guitar has renewed my interest in guitar playing," announced Cash.) He is now working on a new guitar for Ronstadt which will be finished in bright pink and inlaid with ribbons, bows and cherubs.

"Most people look at a guitar and wonder how in the hell you get something like that out of a log," Ferrington tells me one night as we drive together to the Universal Amphitheatre in Universal City to hear an Elvis Costello concert. "It's actually not all that hard, once you know how. But for me one of the nicest parts of being a guitar maker is knowing that your instruments will be making good music long after they are finished."

As we drive up to the backstage entrance of the Amphitheatre, where Ferrington knows all the guards because he comes to so many concerts, he muses awhile and then says, "When I saw Arlo Guthrie and Hoyt Axton doing a program on TV the other night about Woody Guthrie, and then saw my logo on the peghead of Hoyt's guitar, well, I felt . . . I felt linked to Woody Guthrie himself, just as if I were part of the music, and that really made me feel good about what I am doing."

Danny makes solid-body electric guitars, like the one below for Moody Blues singer Justin Hayward, as well as a more traditional acoustic guitar (in style of Explorer), whose head stock is shown at the upper right. Back view is of an asymmetrical acoustic designed for Carlene Carter, the daughter of June Carter Cash.

By Jeanne McDermott

Researchers find there is more to vision than meets the eye

New explanations of how we see, that go beyond analogies to the movie camera, suggest the brain plays an important role

In an age when scientists can glimpse the nature of subatomic quarks and peer across the galaxies at once-invisible quasars, it may seem surprising that researchers have come up with no single, accepted explanation of everyday vision—of how we see. Traditional textbook treatments of vision have always had a certain touch of magic and metaphor about them, providing models such as that of the movie projection image on the opposite page; yet such analogies really explain little. If, for example, vision worked like the system of a movie camera and projector, producing an image in the brain, the question would then arise: How do we see or make coherent sense of that image? The textbook solution—drawing little men inside the brain to look at the picture—is a modern version of the ancient "homunculus" concept, in which the activities of tiny humanoids can be used to explain natural events. But the problem with all such theories is that these little men must have more little men inside *their* brains.

The problem of how we see has attracted a cavalcade of gifted researchers eager to shed light on the physiological processes and nerve pathways involved in vision; but the more they find out, the further off any final explanation seems to be. In part, this is because research is showing that vision is as much the work of the mind as it is of the eye. Like medieval magicians who produced illusions with lenses and early optical instruments, or those of the last century who created sensations with magic lanterns and film projectors (SMITHSONIAN, July 1981), some scientists now studying vision are gaining insights by tricking the mind—producing illusions and then trying to explain them.

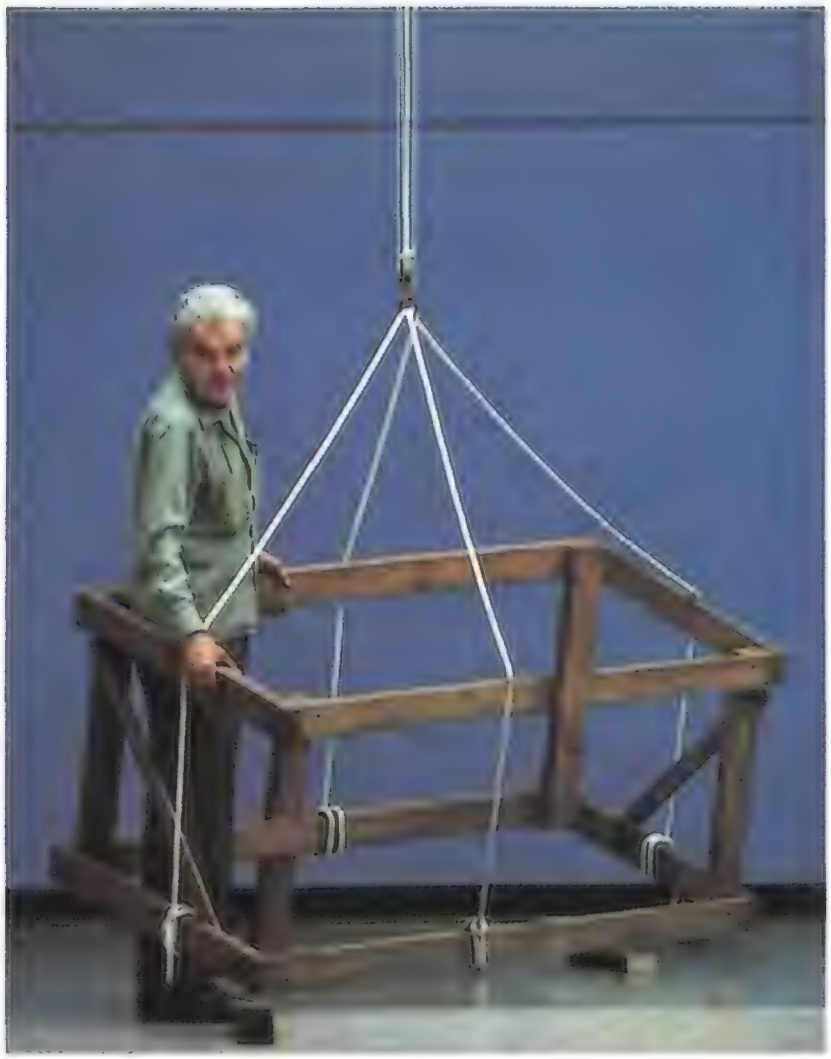
This sometimes makes the experiments of vision researchers as fascinating as the performance of their medieval predecessors, although the scientists might not like the comparison. One contemporary student of vision, however, is an avowed magician. When Jerry Andrus shuffles the cards, his large hands, roughened by years of work as a utility lineman, span the deck with ease. "Pick one," he says. "Write your initials on it. Now slide it back into the deck. Watch my hands carefully." Andrus hands over the deck again. Miraculously, the chosen card surfaces.

How did he do it? Andrus slowly smiles and assures you that even his fellow magicians, wise in the ways of card tricks, get hoodwinked. In the world of magic, Andrus holds an unsurpassed reputation as an original and purist, with so much integrity that he refuses to fool an audience by dishonest means. "The hand is definitely not faster than the eye," he says kindly. "People see what they expect to see. My tricks work because you arrive at the wrong conclusions for the right reasons."

The Castle of Chaos, Andrus' name for the junk-laden bungalow in Albany, Oregon, where he has lived for 55 of his 67 years, is more than a house of cards; it is a workshop for building his visual illusions.

In simplistic account, eye works like camera, records image on film which is then projected into the brain.

Illustration, adapted from an outdated book, begs questions of how the little men in brain can see image.



Magician Jerry Andrus stands inside his "impossible" box (left), with parts of its front and back apparently where they can't be. Picture above, shot from another angle, shows how box is constructed to create illusion.

From a kitchen cabinet comes a shiny brass sculpture that looks like two metal nuts held with a bolt, joined together in ways that only M. C. Escher could duplicate. In his backyard sits a wooden crate whose inside is out and outside is in, defying a master carpenter to nail it all together. The mind balks at the sight until you move a few steps away. Then, the illusion dissolves. "You are taken in by magic because you know the way the world works," he says.

Andrus will be the first to tell you that seeing is being deceived. Consider the act of reading. As you read these words, your own nose intrudes into your field of vision, yet you ignore it, unconscious of the fact that you are seeing part of the page not with both eyes but with one. You are also unaware of a blind spot in your field of vision. On your retina, at the point of attachment where the optic nerve connects the eye and brain, there are no light-sensitive cells (called rods and cones)—therefore no way of registering light. Yet your visual system fills in this blind spot and you see the entire page. Despite the fact that you blink every three to five seconds to keep the eye's cornea wet, you don't experience flickering lights. Your eyes oscillate back and forth as many as 100 times in a second as you focus on a single word, but the page never jumps or jitters. Color photographs consist of nothing more than tiny dots of black, red, yellow and blue printed on a flat piece of paper, yet you perceive three-dimensional faces, objects and scenes.

Jeanne McDermott, a frequent contributor, wrote on "talking trees" in the December 1984 issue. She is at MIT on a Vannevar Bush Fellowship this year.

What all these examples point to is the intimate association of eye and mind, the fact that vision is more than a process of mechanical recording of reality "just as it is." If we do not yet know exactly how the eye and brain fashion a solid, seamless view of the world from nothing more than rays of light, scientists *have* learned enough about vision to know that it is not a single process. In fact, there are enough processes involved to occupy the attention of a great many laboratories and researchers, each exploring a different aspect of how we see.

There are, in fact, so many fascinating and unexpected results coming out of vision laboratories that their work leads in a variety of directions. But the field can be divided into three main areas. One group of researchers is exploring the basic mechanisms of vision in the brain as well as in the eye. Another group is looking at how we get sight as infants, and what happens when we lose it. Finally, there are the scientists studying illusions and discovering that much of what we see is what we learn and expect to see.

Jerry Lettvin, professor of electrical engineering at MIT and early explorer in the field of vision, is a provocative guide to the field. In his laboratory, housed in an old barracks building with furniture that could have been left over from the last war, a happy mayhem prevails. The telephone clangs constantly.

Friends and researchers amble in and out, trading jokes, updating their latest projects. With unkempt gray hair, a pair of glasses on his nose and another pair riding on his head, Lettvin warns the newcomer not to expect any unifying vision of the field of vision: "I *see*. What does that mean?" He picks up the nearest object, a butt-filled ashtray, and peers at it. "Some argue that you have an idea of an ashtray built into your system. Some say that you are a tabula rasa and learn only from visual experience. A number of people believe that if you know the architecture of the neurons, you know what they do. The field is like the blind men and the elephant. The complexity is not in the subject as much as the different views of the subject." Neurobiologists tend to describe vision in terms of nerve-cell activity, psychologists in terms of behavior, and computer scientists in terms of mathematical symbols. And there seems to be no common language to knit their different ideas together.

Twenty-six years ago, Lettvin and his colleagues did a series of experiments which, on a limited scale, united these disparate viewpoints. At the time, no one knew what information is sent to the brain from the eye. Lettvin, along with Humberto Maturana, Warren McCulloch and Walter Pitts, decided to study the frog's visual system because of its relative simplicity and importance for the frog's survival. (A frog will starve if the bugs around it are not moving—or are moving in swarms.) They hypothesized that rather than sensing light directly, the cells in the retina detect changing patterns of light that correspond to biologically important objects in the frog's world. With needlelike electrodes, they eavesdropped on single nerve fibers in the optic nerve as they moved various objects before a frog's eyes.

In 1959, they published "What the Frog's Eye Tells the Frog's Brain," a landmark paper often cited by many of today's vision researchers as a source of inspiration. They reported that certain neurons in the frog's eye, which they were tempted to call "bug detectors," respond only to small, dark objects moving through the frog's field of vision. At the eye—before any signal reaches the brain—the neurons already perform image processing more complex than anyone had imagined: the neurons don't respond to any particular quality of light, rather they register *differences* in the distribution of light and dark impinging on the retina. In this way each optic neuron is telling the brain about patterns, not just points of light. In a sense, the frog's eye is giving the frog's brain information about the meaning of what it is seeing, demonstrating that the ability to abstract information has been built into the eye itself.

It turns out that the human eye is even more powerful and versatile. While we lack bug detectors, our retina, which has maybe 125 million rods and cones as well as four other types of specialized nerve cells, performs the equivalent of 10 billion calculations per second. (A good personal computer can perform only about eight million calculations per second.) Long before an image reaches the optic nerve, long before we experience a conscious sensation of sight, the eye has translated rays of light into strings of nerve impulses that encode essential information about pattern, shape, size, shadow, movement and color.

David Hubel, neurobiologist at Harvard Medical School, and Torsten Wiesel, neurobiologist at Rockefeller University, were among the first to ask how specific brain cells transform all of this information. They recorded the electrical activities of the cells in a monkey's primary visual cortex, an area on the surface of the brain just above the back of the neck where

Jerry Lettvin, who discovered what a frog's eye tells frog's brain, presides over happy mayhem at MIT.

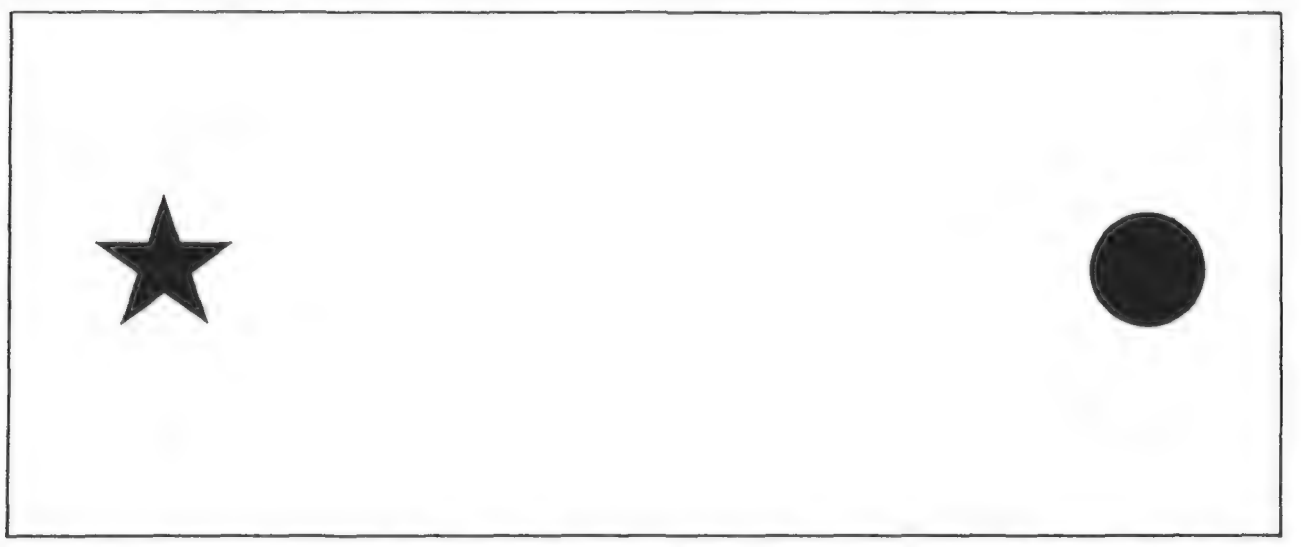
Dave Van Essen at Caltech, with model monkey brain nearby, thinks vision uses about half of the cortex.

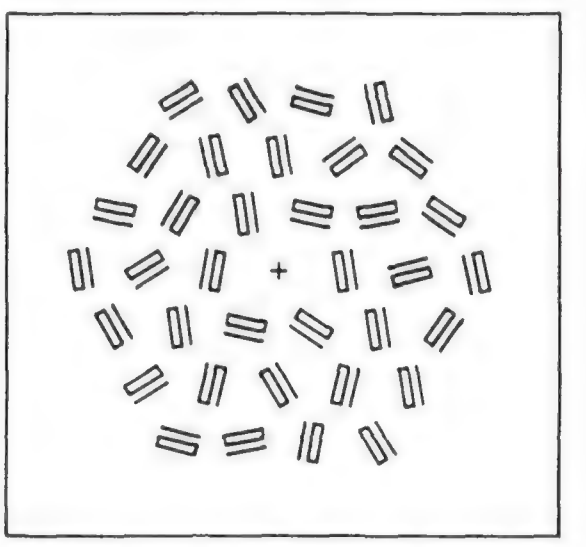
nerve impulses from the retina are received. "It's a fascinating structure," says Hubel. "Other neurophysiologists did not warm to the fact that it could do fancy things." And what fancy things it appears to do! The further Hubel and Wiesel probed in the brain, the more complex and specific became the response of the cells; all neurons respond to moving lines, but some neurons loved only lines of a given orientation, and some neurons loved only lines of a given orientation moving in a certain direction. In 1981, they shared a Nobel Prize for their painstaking work.

The legacy of Hubel and Wiesel's research is a very precise picture of how some individual cells function and a very perplexing picture of how these cells enable us to see. Does the rest of the visual system follow the same hierarchy? Do nerve cells exist which respond to progressively more complex images, like weeping willows and red Ferraris? This seems unlikely, says Hubel, but he admits that no one has proposed any good alternatives.

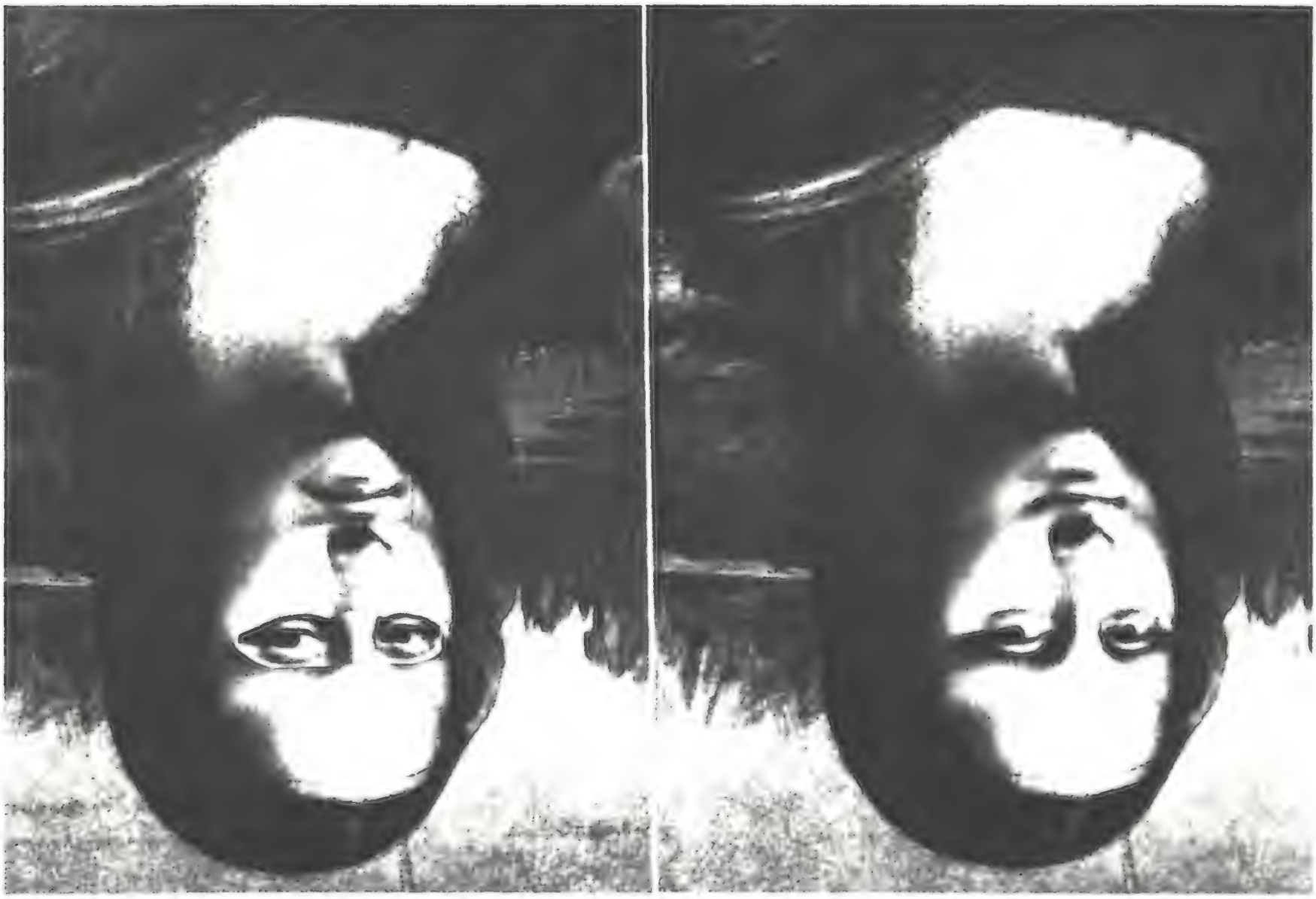
"You should probably look at vision as a system of various centers, all branching and highly interconnected," Hubel suggests. Indeed, at Caltech, neurobiologist Dave Van Essen is doing just that. Van Essen is making forays past the visual cortex into uncharted regions of the brain. "There may turn out to be as many as 20 different processing centers for vision," says Van Essen, who keeps a colorful model of the monkey's brain next to his desk for frequent reference. With all of its convolutions and wrinkles, he suggests that 50 percent of a monkey's cortex (and about 30 percent of a human's) may be involved in vision, a number that reflects its importance and accounts for the largely effortless and unconscious ability to see.

Neurophysiologist John Allman, whose ancient sheep dog guards his office one floor below Van Essen's, wants to understand how these areas developed from an evolutionary perspective. He and colleague John Kaas work with primates, like owl monkeys and bush babies, whose visual systems are similar to ours but whose brains are unencumbered with more sophisticated abilities like speech. "You have all of these different areas. To what extent are visual functions distributed?" Allman asks. He discovered one area, MT, that seems to specialize in the perception of motion. Information travels quickly to MT, which Allman believes reflects the fact that vision evolved primarily to guide behavior. "You act on motion information immediately," says Allman, whether it is dodging shopping carts in the supermarket or slapping hockey pucks. When a stroke or accident disturbs the part of the human brain that corresponds to MT, people sometimes report that they see in stop-action or freeze-frame images. Curiously, when a stroke or accident disables





To detect your blind spot, hold page at eye level, close left eye and fix right eye on the star, while moving page slowly toward and away from face. At a distance of 12 to 14 inches, round black spot will disappear. In test of texture perception at right, researcher Bela Julesz hid a single letter S among the many 10s.



Pair of upside-down *Mona Lisa*s, one doctored by Bela Julesz, shows how prior experience affects what we see: turned right side up, distortion will appear far worse, in comparison to familiar view of the face.

other parts of the visual system, the perception of motion often recovers first. Allman has found that the nerve cells in MT do not simply respond to motion but also integrate information about motion in the environment and the animal's own movement.

The intimate link between vision and movement comes as no surprise to Roger Sperry. Professor of psychobiology at Caltech, he shared the Nobel Prize in 1981 for his work on the special capabilities of the brain's left and right hemispheres. He has long advocated a holistic view of the mind and body and sees the brain as a mechanism for transforming sensory patterns into patterns of motor coordination. Sperry argues that the major work of the visual system is not, as people usually think, to make visual copies of things perceived or imagined, but rather to prepare the brain to respond to whatever the situation demands. Thus the visual system and the motor system are deeply intertwined. "Where you see an object depends on the input from almost every joint in the body," says Sperry. "Think of throwing a dart at a target. Not only the angle of the eyes and tilt of head but nearly your whole body schema must be taken into account to throw accurately."

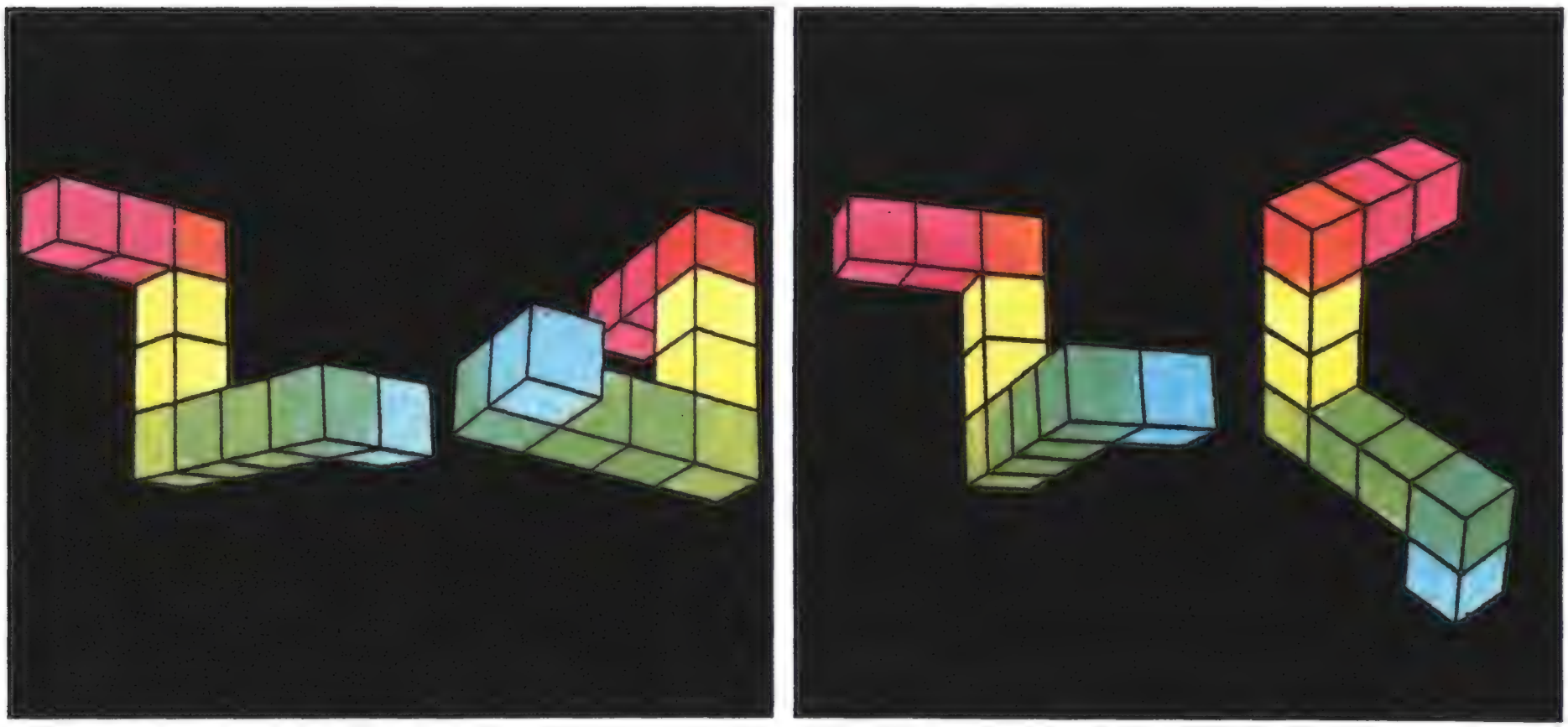
As scientists like Van Essen and Sperry move our understanding in the direction of holistic complexity, of a multitude of interconnected vision-processing centers, other scientists are working on the problem from a different point of view. They are gaining insight into the visual system by studying the way it develops, or seeing what can be learned from the ways it sometimes fails to work.

Michael Stryker at the University of California Medical School in San Francisco wanted to know how important early experience is to the development of the visual system. When he tested kittens that had been raised wearing goggles covered with horizontal stripes, he found that the animals could no longer respond to vertical and oblique lines. Even though these kittens had been born with cells specialized to see these, a drastically curtailed visual environment during a critical period of development—for kittens, from birth to three months—destroyed the specific response of those cells, limiting their future capabilities. He

concludes: experience safeguards existing structures.

Humans need a full range of visual experiences at an early age, too. It is unusual, if not impossible, for blind people who have never had sight to regain it. Alfredo Sadun, neuro-ophthalmologist at USC School of Medicine, recently made tests before and after corrective surgery on the eyes of a three-year-old boy who was blind from birth. Afterward the child still said he could not see, although his eye movements had changed. Rather than scanning at random, they tracked objects more nearly as a sighted person's would. Sadun believes that at some basic, primitive level the child's visual system is working but may never attain more sophisticated, conscious levels of vision. For people who go blind as adults and later regain sight (which is possible with new cataract operations), the difficulties in adjusting seem to be psychological as well as neurological.

Just as vision is not a single process but the integration of many, so is blindness. Patients who have what physicians call "partial blindness," in which a stroke or head injury blinds one part of the visual system but leaves the rest intact, offer revealing insights into how the brain might organize and store different types of visual information. One phenomenon is called prosopagnosia: the person can see faces perfectly well but does not recognize a familiar face such as a mother or child. In another phenomenon called "neglect," a person can see but simply does not pay attention to one-half of the field of vision. "These people have lost the potential to invest one-half of the world with importance," says Marsel Mesulam, director of Behavioral Neurology at Beth Israel Hospital in Boston. He mentions one alcoholic patient with such severe neglect that when he had the delirium tremens, he hallucinated only on one side. Another unusual case of partial blindness involves the ability to recognize everyday objects. People with a very special type of injury recognize a clarinet or a pail only when seen from a conventional viewpoint, from the side, say, but fail to recognize the objects from above, an *un*conventional viewpoint.



In Roger Shepard's research, pairs of images in three dimensions are shown, and people are asked to tell if they are identical or not. Most people mentally rotate and match the images. Only pair on left is identical.

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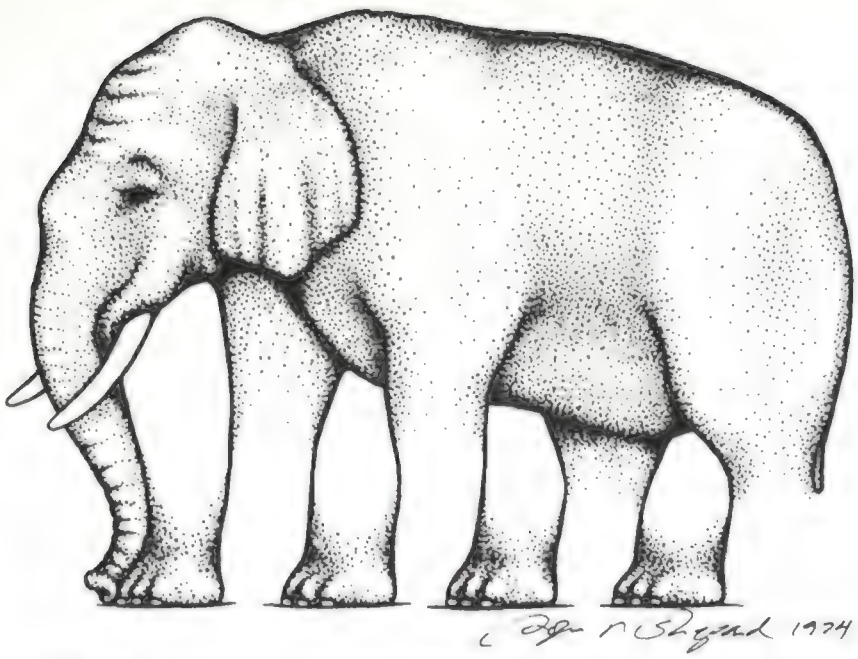
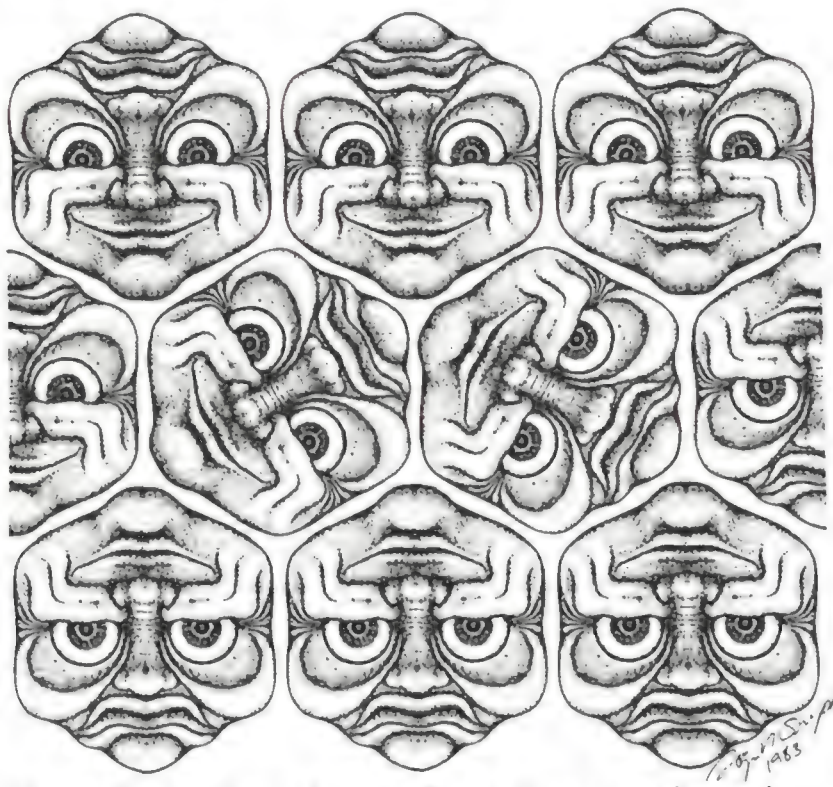
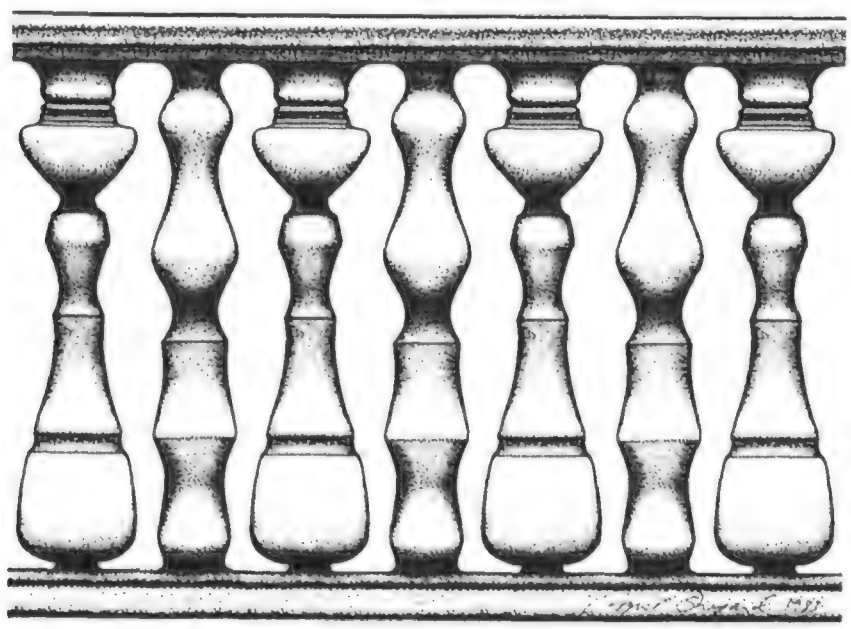


On the lighter side of science, Shepard invents illusory figures such as this elephant—with how many legs?



Faces that smile or frown, depending on orientation, reflect Shepard's interest in illusion and rotation.



Another of Shepard's "perceptual anomalies" tricks brain and eye, looks either like stone pillars or nudes.

MIT's Vision Development Laboratory studies how children learn to see naturally. "Normal vision acuity, the ability to see details, develops over the first five years of life until it reaches adult levels," says Richard Held, the lab's director. "But the first six to eight months show the greatest changes." For a reason that defies simple explanations, the visual system of girls appears to develop initially at a faster rate, but by eight months the boys have caught up.

In a windowless room with black cinderblock walls, experimental psychologist Jane Gwiazda tests a 6-month-old child. She presents two striped patterns to the child and decides which one commands his gaze. Gwiazda became interested in infant vision with the birth of her daughter ten years ago. Since then, a number of startling facts have emerged about the way infants see. "For a newborn, the world is fairly fuzzy and two dimensional," she says. The eyes wander. Infants' attention is caught by major lines between light and dark, like the contrast between forehead and hairline," says Gwiazda.

At the age of four months, with such regularity that it rarely varies by more than two weeks, infants acquire the ability to see in three dimensions. The brain develops stereovision—that is, it takes the two slightly different images that each eye receives and fuses them, creating a sensation of depth. To test for stereovision, Gwiazda outfits infants with goggles similar to the ones worn in 3-D movies (p. 107). "The kids go a little nuts," she says. "Some reach out and try to grab for the object."

Distinguishing needles from haystacks

Bela Julesz, engineer and psychophysicist at Bell Laboratories in Murray Hill, New Jersey, developed another test for stereovision. Born in Hungary and trained as a radar engineer, Julesz is a recent winner of a MacArthur Fellows Award who approaches the subject of vision with a buoyant mind and a tie, shirt and jacket in different colors and patterns. Julesz not only wants to understand how people see—he hopes that we will ultimately build a machine that can see. He is hard to place in any of the categories of vision researchers because he is concerned with basic neurological mechanisms of vision and also explores its illusory aspects; his constructions, such as the upside-down *Mona Lisa*s on page 101 (adapted from an idea of Peter Thompson's), demonstrate how we see what we are prepared to see.

Julesz' early work on depth perception led to the first foolproof test for stereoblindness, a handicap that affects about two percent of the population. Now he is working on a theory of texture perception. Texture is one of the simplest ways of immediately distinguish-

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Vision research focuses on the brain

In classic depth-perception experiment, a baby crawls on glass floor over "visual cliff" without hesitation —until about four months, when stereovision starts.

ing apples from oranges or needles from haystacks. All the possible textures and shapes in the world, Julesz says, can be broken down into a few basic elements—patterns of line segments, crossings and elongated blobs that he calls textons. Ordinarily our visual system sees them immediately without strain or effort. Only a change in adjacent textons or texton density catches our attention. Julesz demonstrates with spare, simple drawings. Some patterns pop out immediately, shouting their presence to your visual system. Others emerge reluctantly, with careful combing (p.100). "You have a pre-attentive unconscious system that measures textons. Only where textons differ will you direct a small disk of focal attention before you actually move your eye. If you had texton equilibrium, it would never occur to you to scrutinize anything." Julesz sees textons as the atoms of vision.

Even when we do actively scrutinize a scene, we may not believe what we see because of deeply ingrained ideas about how the world works. Roger Shepard, psychologist at Stanford University, holds a dime-store toy in the palm of his hand. Flick the lever and under the plastic cover an enraged swami lops the head off a cobra. But in the face of the toy Shepard inserts a key that unquestionably blocks the path of the swami's sword. Flick the switch and the swami still appears to lop off the cobra's head. How is that possible? Shepard laughs, "The sword fell backward, not forward." And it fell faster than the eye could see.

We have internalized the everyday world

Shepard believes that our tendency to see the sword swing down reflects certain regularities about the world which we have deeply internalized. Just as we have internalized astronomical rhythms, like the 24-hour day, to the point where we have hormones that follow circadian rhythms, so we have internalized the physics of the everyday world—for example, that space is three dimensional, that up and down exist, that falling objects move along the shortest path between two points—perhaps to the degree that it is wired into our neurons. The way we represent the world in the mind's eye follows the properties of the world as we experience it. Shepard came to that conclusion after he displayed to viewers three-dimensional objects in two different orientations and found that the time it took people to identify identical objects was equal to the time it took to mentally rotate the objects (p. 102).

Illusions, which Shepard designs in his spare moments, are also a result of this internalization process. "Usually there is a tight mesh between what is out there and what is inside your head," he says. But illusions result when the perceptual system draws conclusions from wisps of evidence or conflicting clues.

The durability of illusions strengthens Shepard's argument. "We can be told about visual illusions until we consciously understand, but it does not affect our experience of them. We can't undo them. Perception depends on highly efficient machinery over which we have no control."

Computers, in contrast, offer some highly efficient machinery over which we have complete control, and some computer scientists believe that the simplest way to understand the fundamental principles of vision is to build a machine that can see. It is a functional test of the status of knowledge, an approach that Leonardo da Vinci first embraced. But building computers that see has proved to be more difficult than anyone expected. There is a story that in the late 1960s the Artificial Intelligence Laboratory at MIT launched a summer vision project, assigned a couple of students to design a machine and expected success by Labor Day. The project failed because nobody grasped what prodigious experts we are. Twenty years later, with funding largely from the Department of Defense, machines have been made to recognize samples of print, detect the outlines of a gas cap in a bin of random objects and even reconstruct a three-dimensional scene from two images. But you would not trust any of them driving through New York City traffic.

Eventually, computers will doubtless be built and programmed with improved vision, but this may not bring any greater understanding of how humans see. Like explanations based on the technology of movie cameras and projectors, new explanations based on image processing in computers may simply put off the basic questions rather than answer them. The problem with these technological analogies is that they ultimately require the existence of someone inside the brain to see the image projected there. This "little man within a man," or homunculus, is a form of explanation discarded by scientists many centuries ago—yet, in a sense, they are still stuck with it. Walle Nauta, professor of neuroanatomy at MIT and one of the pioneers in mapping pathways of nerve impulses, feels that in the end we will probably never totally understand the vision process.

Fortunately, that doesn't stop him, or any of his colleagues, from going on with their experiments, discovering more of the fascinating details of the vision system, and simply ignoring the little man lurking beyond their explanations.

Five-month-old baby with stereo goggles looks at set of vertical stripes, some of which "stand out" in 3-D.

Researchers at MIT vision lab can tell when a baby sees the 3-D effect by monitoring its head movements.

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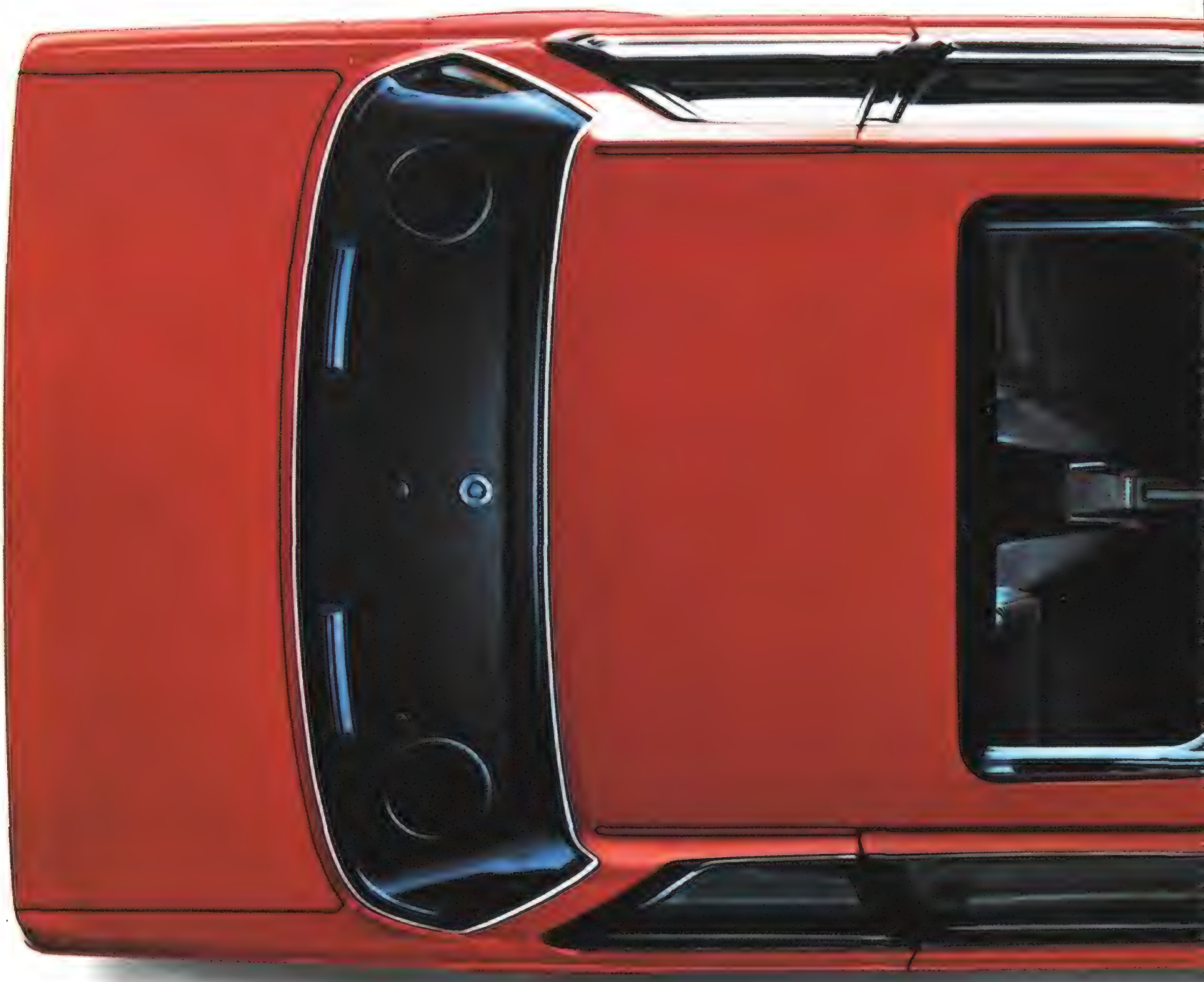

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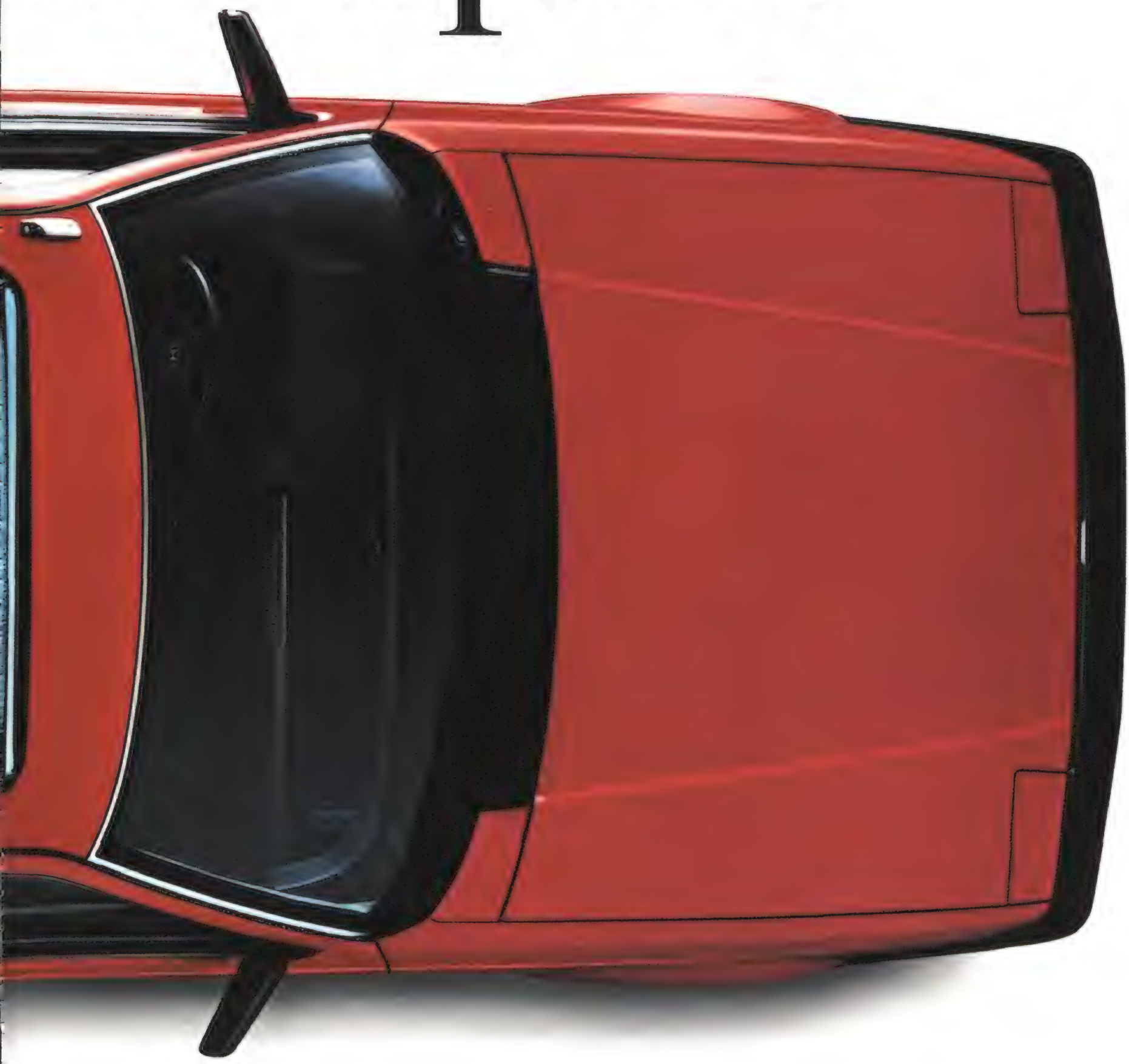

Abakanowicz: "I really am a loner. To be an artist is not a profession but a way of existing."

Primordial-looking landscape of burlap backs, made between 1976 and 1982, is composed of 80 pieces.

By John Dornberg

One way to create fine art is to take the greatest risks

A lonely childhood, the horrors of a war-torn Poland and a fiercely independent viewpoint inspire the work of Magdalena Abakanowicz

"It is easy to follow, but it is uninteresting to do easy things. We find out about ourselves only when we take risks, when we challenge and question. I was searching for the greatest risk: to make art of something that is not considered art. For me there was nothing to follow, but everything to discover."

The auburn-haired, green-eyed woman who says this, in thickly accented but carefully chosen English, is Poland's Magdalena Abakanowicz, an artist who has revolutionized traditional concepts of tapestry, weaving and fabric by dramatically wrenching fiber materials from the realm of craft to fine art—haunting, anguished, personal art charged with energy and emotions that jar the senses. It is an art that expresses her constant struggle against the limitations and adversity of an unhappy childhood and the horrors of adolescence in an occupied and war-torn land; against the strictures of artistic convention and daily life in a

Figures, molded from a plaster cast, are nevertheless individualized because of hand-shaping and texture.

bureaucratic, authoritarian, struggling poor country.

Today, Abakanowicz, 54, has been acclaimed by critics as one of the most extraordinarily creative artists in the world. Since 1960, when she made her public debut in Warsaw, her pieces have been shown in more than 100 group and 40 solo exhibitions. Nearly 500 articles, reviews and books mentioning or featuring her have been published, and 40 museums on four continents, including New York's Museum of Modern Art, the Australian National Gallery of Art in Canberra, the Kyoto National Museum of Modern Art and Paris' Centre Georges Pompidou, own her work.

Yet it was only recently that she was introduced to a broader North American audience, thanks to a retrospective of her major pieces, organized by Mary Jane Jacob, chief curator at Chicago's Museum of Contemporary Art, which toured the United States and Canada. It is overpowering work.

There are, first, her cycles of fiber reliefs and three-dimensional works called *Abakans*, a title coined from her name—immense, abstract sculptures woven from sisal, hemp, flax, wool and horsehair. Though the oldest of her major creations, they continue to assault the eye and arouse the imagination.

In the mid-1970s Abakanowicz turned to what many critics regard as her most mature, most expressive but also most enigmatic works: the series called *Alterations*, which she arranges anew as "ambiences" or "environments" at each exhibition, thus making the show itself a work of art. The series includes, among others, the cycles called *Heads*, *Seated Figures*, *Backs* and *Embryology*.

The *Heads* are 16 bulky, three-foot-high rounded objects, stuffed like mattresses and covered in roughly "sutured" burlap. The 18 headless, handless *Seated Figures* (pp.112-13) are long-legged humanoid shells

The artful rage of Magdalena Abakanowicz

The Stedelijk Museum, Amsterdam

Black Garment, one of several, dated 1969, is made of woven parts suspended from hangerlike metal frame.

Of burlap and glue, these life-size *Seated Figures*, 1974-76, are from series of 18. All sit on steel stands.

of glue-stiffened burlap. *Backs* (pp. 110-11) is a group of 80 headless, handless, legless burlap shells cast from the plaster mold of a male torso. From a distance they appear alike, but close up each *Back* is quite different—the impression one of fourscore individuals in a tribal ritual.

In stark contrast to the gloomy message of the other works, the *Embryology* cycle (pp. 116-17) is a life-affirming ensemble: a lunarlike landscape of 800 ovoids, cocoons, eggs, "pebbles" and "rocks," ranging in size from two inches—and reminiscent of potatoes—to boulder-size forms six feet or more long.

Since 1981 Abakanowicz has turned to working also in wood—a cycle of 15 roughly axed fence poles that she calls *Trunks*—and to drawing and painting. She is an artist who puts total self into her creations, and

To intensify the power of the work, the artist left out heads, hands and any indication of sex.

what she creates is art that eludes explanation. Indeed, she sometimes tersely tells visitors, interviewers and critics: "If you think it needs explaining, you wouldn't understand it anyway. At the bottom of all art there is mystery."

The *Backs* are a revealing example of what she means. She has been asked whether they represent Auschwitz or Dachau, a religious ceremony in Peru, or a ritual dance in Bali, and, more recently, though she began making them as long ago as 1976, whether they symbolized Solidarity or the imposition of martial law in Poland in December 1981, when the cycle was nearly completed.

"For everybody what they mean is something different," she says. "For me what matters is the imagination and that they are about human problems in general. When I leave them to the imagination of people, I am never disappointed by the reception. Only, people today are afraid to judge or understand such objects in their own way. We have got accustomed to having everything explained, explained and explained away."

The Detroit Institute of Arts

Abakan 27, 1967, hand-woven of sisal, is six feet wide. The forms and textures are typical of her early work.

Given her internationally peripatetic career, her fluency in English, French and German, her many lecture trips, and her need to arrange and install each exhibit of her work differently according to the environmental possibilities or limitations and the architectural stimuli of each museum, it would have been easy enough to meet Magdalena Abakanowicz in Vienna, Paris, Dallas, New York or Tokyo.

But as a Polish artist it seemed only appropriate and logical to interview her in her native land, in the city whose tribulations she has experienced since adolescence. Her cramped studio is on the tenth floor of a prefab concrete Warsaw apartment house, adjacent to two cubiclelike rooms that she shares with her husband of 28 years, Jan Kosmowski, a civil engineer.

"Art is universal," she says, showing me a heavy ceramic sculpture. "This could be a Matisse or a Picasso, but it comes from Papua New Guinea, where I got it in 1976. It surrounds the fire during cooking because it is believed to be charged with good spirits that enter the food. It is not primitive art. It is art. It speaks a language we can easily understand. A Polish artist? An American artist? I am not sure what that means. I think I could work on the moon and still create my own reality."

At the same time, however, she is adamant that

Drawings from *Bodies* and *Faces* cycles frame *Wheel and Rope* at Museum of Contemporary Art, Chicago.

Poland is her land and the font of her life: "I am terribly at home here and feel a very strong friendship with every piece of grass, and the sky, and the trees, and the landscape."

She is the daughter of aristocrats—a Polish mother descended from landed knights and a Russian father who escaped the Bolshevik revolution for the safety of a reconstituted Poland in 1918 and who draws his name and lineage from Abaka-Khan, a 13th-century Mongol ruler over what is today southern Siberia. She was born in a 32-room mansion ten miles from Warsaw. Until the German invasion and the start of World War II in September 1939, hers was a life of genteel splendor. But it was not a happy childhood.

Abakanowicz has written poignantly about that childhood in a prose poem called "Portrait X 20." In it she describes the remote sternness of her father and the aloofness of her beautiful mother, who had so passionately wanted a son instead of a daughter. The coldness and loneliness of the great house in which she was raised drove her to find her own world in the woods and fields. "I escaped outside," she wrote. "I became one with this whole world of movement and stillness, growth and decay. There I belonged. With concentration, for hours I looked at the grass and the water. I wanted to subordinate myself to them, so that I might understand the mysteries which separated me from them." She had an urge to touch and hoard twigs, stones, shards, bark. To her they embodied stories with which she wanted to live. With a pocketknife she carved. She squeezed and molded clay into faces—trying to find herself "by building objects as a bridge between me and reality."

Abakanowicz is hardly the "artsy-craftsy lady weaver who makes tapestries" that one misguided critic expected to meet when he visited her in Warsaw in 1978. She is a throaty-voiced, dynamic woman, given to wearing the latest fashion in jeans, sporty blouses and casual pants outfits, who drives her aging Volkswagen through the streets of Warsaw as if she were running time trials for a grand prix race. When she works with wood pieces such as the *Trunks* she can swing a mean ax. On her only steel sculpture, an abstract untitled composition standing 23 feet tall on a square in the Polish city of Elblag, she did the welding. Her art is heavy—try lifting a sisal *Abakan* measuring 13-by-13-by-11 feet—and she lugs it herself.

Yet, though her laugh is hearty and spontaneous, she does not laugh often and remains a pensive, introspective, self-searching loner with antennae sensitive to the people and the world around her.

As a young girl her life changed abruptly with the German invasion. Her father was involved with the Resistance, the Polish Home Army, and their house often served as a hideout for partisan fighters and as a refuge for Jews from a nearby village. He taught her to shoot, to clean and assemble weapons. She vividly recalls the night in 1943 when drunken Wehrmacht soldiers barged in and began firing wildly. A dum-dum bullet severed her mother's right arm between the shoulder and elbow and also injured her left hand.

With the Soviet Army and the front line approaching in 1944, her father moved the family to Warsaw. It was just in time for the great Warsaw uprising, which began on August 1 and which the Russians let the Germans crush in 63 days of bloody fighting.

Having been evacuated to the suburbs during the fighting, Abakanowicz, only 14, was recruited as a nurse's aide in a makeshift hospital. "I remember one day they brought someone with his face completely burned," she later wrote. "He screamed all the time from his open mouth while on the stretcher, and later,

John Dornberg was Newsweek*'s bureau chief in Eastern Europe and the Soviet Union. He now lives in Munich and writes widely on politics and art.*

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when laid on the floor, until he died. Constantly new people, always horribly wounded. . . . I do not think I talked to anyone. I did not know how to."

When peace finally came to Warsaw several months later, the city was a burned-out wasteland. Her parents survived by selling on the black market what they had been able to salvage from the manor. Ultimately they turned to running a newspaper stand. At first they disapproved of her plans to study art and become a painter, arguing that it was no way to make a living. But eventually they relented.

Overcoming parental objection was only the start of the battle. Children of the prewar gentry were denied admission to universities and other institutions of higher learning in those days of orthodox Stalinism. The regime was striving to turn Poland into a proletarian paradise. To get into an art school in Sopot, on the Baltic coast, in 1949, and then into Warsaw's Academy of Fine Arts in 1950, she had to hide her family background. To support herself she donated blood and worked every other night holding a lantern for men repairing the Warsaw streetcar lines. She lived in student dormitories—16 girls to a small room—or illegally with families that took her in, often rotating use of a bed with other tenants who worked night or swing shifts. There was very little to eat.

But the biggest obstacle of all was subordinating herself to the strictures of education, instruction and academic discipline. "I like neither rules nor prescriptions, these enemies of imagination," she has said. And so it was at the Academy. To complicate matters, it was the period of "socialist realism," when artists were expected to produce figurative, optimistic pictures of smiling peasants and happy workers. But all that Abakanowicz wanted to do was express herself, and all she could do was make "large, abstract, smudgy things" in which she sought form by placing lines, one next to the other. "The professor would come with an eraser in his hand and rub out every unnecessary line on my drawing," she recalls. "I got bad grades. I hated the school and the atmosphere more and more."

Embryology is fashioned of burlap, cotton, rope, nylon, sisal; pieces range from two inches to eight feet.

Yet, as much as she loathed the Academy, she also knew the importance of conforming long enough to obtain a degree that would allow her to join the Polish Artists' Union. Membership was a prerequisite for living and working as a professional painter or sculptor. Like those for writers, actors and journalists, that union was disbanded in 1981 by martial-law decree. A new artists' union, having the government's approval, has been formed. Abakanowicz has not joined it.

After graduating from the Academy in 1954, she worked as a tie designer in a silk factory. In her spare time, in the cell-size room she had rented, she painted gouaches of abstract flowers on huge pieces of paper pinned to the wall, thinking that abstractionism was becoming acceptable "because Stalin was dead." She tried sculpture, experimented with painting and also started weaving, having gone back to the hated Academy to study the technique.

Although she felt that her art was on the fringes,

Part of *Alterations* cycle, *Embryology* was first seen at 1980 Venice Biennale. This was Chicago exhibit.

she was establishing a reputation in Warsaw art circles, and in the spring of 1960 the Ministry of Culture offered to sponsor a one-person exhibition of her oil paintings, paintings on fabric and her first experiments in weaving.

The vernissage was to be April 2, 1960. But just before the opening, a government official came to look at the exhibit. Abakanowicz recalls his reaction: "Abstract painting! We will not show it to the public." Stalin, she discovered with a jolt, was far from dead. But Maria Laszkiewicz, a professional weaver and respected tapestry artist, had seen her work. Thus began a lifelong friendship and a new era for Abakanowicz. Laszkiewicz took her under her wing, taught her intricacies of weaving, forced her to discipline herself, provided a loom and place to work in her basement studio, and, most important, entered Abakanowicz's name on the list of Polish weavers to show at the 1st International Biennial of Tapestry in Lausanne, Switzerland, in 1962.

That first biennial, which marked a turning point not only in Abakanowicz's life and career as an artist, but in the role of fiber and soft materials in fine art, was organized jointly by the French painter and tapestry master Jean Lurçat and Lausanne gallery owner Pierre Pauli.

"It started a movement," Abakanowicz explained, "because the works we showed from Poland were not tapestries at all. They were accepted by the jury as something new, as something quite different that should be shown. Pauli, who was the mentor and driving force behind it all, understood immediately the search for freedom that we Polish artists represented in our work, a search for a new expression, for the participation of fiber in contemporary conceptualist sculpture and painting."

Pauli died in 1971, but his wife Alice has continued his work. It is her gallery in Lausanne that is Abakanowicz's only permanent commercial representative, and it is there, after Poland, that she first exhibits abroad her new work. Alice Pauli acts as her agent and intermediary, making arrangements with museums outside Eastern Europe. "To work with a Polish artist one must really be in love with art," Abakanowicz laughed. "Sometimes correspondence is en route for a month and it is very difficult to get a phone call through."

At the 1965 São Paulo Bienal in Brazil, without

knowing her or anything about her, the judges awarded Abakanowicz the gold medal after seeing her early fiber reliefs. It was the start of an avalanche of prizes and honors, at home and abroad, which shows no sign of receding.

For all her fame, she remains essentially the same. She and Jan are still squeezed into the same studio and apartment allocated to them by state authorities close to 15 years ago, and, working literally elbow-to-elbow, whip up memorable meals for their guests in its box-size kitchen. The couple across the hall, she points out, have four children and only two rooms.

Like other Polish housewives, she waits in meat queues, battles the frustrations of rationing, and struggles with the exigencies of an economy in which some things are "out-of-stock" most of the time, and most things some of the time. Indeed, adversity may be one of the secrets to the powerful charge and provocative richness of Magdalena Abakanowicz's art.

"You know, we talked about my unhappiness as a child and as a young girl," she said. "Much of it was not knowing who I was and what I was supposed to be. This is why I had to go against absolutely everything and find my own way, my own reality, my own needs. Creating our own reality is what we are all—all artists—doing, both as a form of protection and as a form of protest. Protest is perhaps the wrong word. Questioning, challenging."

Abakanowicz works without prior written plan or sketch. From the *Abakans* to the *Backs*, from *Embryology* to the *Wheel and Rope*, from the *Trunks* to her charcoal and oil-paint *Faces*, everything takes shape in her mind—sometimes during weeks and months of contemplation—and she does not begin to create the object until it is clear in her inner vision. "Between myself and the material with which I create," she has written, "no tool intervenes. I select it with my hands. I shape it with my hands. My hands transmit my energy to it. In translating idea into form, they always pass on to it something that eludes conceptualization. They reveal the unconscious."

She also works slowly. *Embryology* took four years to complete, the *Seated Figures*, five, the cycle of *Backs*, six. "And in that time I have changed along with them," she says.

But why 80 *Backs* or 18 *Seated Figures* or 15 *Trunks*? "I needed 80 to make my statement," Abakanowicz replied. "At first I made six, but then I saw I must have 80 of them—to show a crowd, a tribe, or a herd, like animals. Yet within that tribe each one is different, an individual. We seek comfort in numbers, in a group, but each of us is very much alone."

And what are they saying? What is Magdalena Abakanowicz saying? That is the mystery of her art—perhaps, as she maintains, of all art. She is not loath to use words. She reaches out to communicate in writing, keeping up lengthy contacts by letter with many of the numerous people she has met at her exhibitions and lectures around the world. "But you see," she said after we had talked for many hours over a period of several days in Warsaw, "what is most important to me as an artist is the struggle to express, to say in this language without words, this language of art, what I have to say."

In Warsaw studio, Magdalena Abakanowicz studies some of the formidable figures of her imagination.

Straight-on view of one of the life-size *Seated Figures* reveals tactile, textural nature of her materials.

The boys try a new place in their Peugeot

They have driven almost two hours to get to this place, a lake with an old Indian name that means "Fish jump out."

It was still dark when the man woke the boy and they both tiptoed around the house, the floorboards cold under their feet, getting ready. Getting ready consisted of climbing into some clothes and taking the sandwiches out of the refrigerator. The man did not make the boy wash his face or brush his teeth, which made the day seem even more special.

They do not bring the boy's sister this time. She is only four and makes a lot of noise and thinks fish stink. It is just the two of them, the big one and the little one. "The boys," as the mother calls them.

"Do you think it's true?" the boy asks.

"Is what true?"

"Fish jump out."

The man nods. "You'll see."

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Wearing required tie and jacket, sophomores posed for portrait in 1901 studiously displaying textbooks.

By Robert Wernick

At Boston Latin, time out for a 350th birthday

One of the nation's oldest and greatest public high schools still thrives on a diet of classics and a humongous work load

At the time there were only 1,000 students in the school—all boys. Now there are 2,300 of both sexes.

Biology class today still looks studious, but reflects changes in dress code and makeup of the student body.

The idea of holding high school students to high standards has been hotly debated in recent years, and never more than now, when parents, teachers and the public at large are wrangling over the quality of public education and how to improve it. But there are some public high schools whose commitment to the highest standards—though it has sometimes been assaulted—has never wavered. They are still what used to be called "melting-pot" schools. They require entrance exams. They challenge their students with rigorous programs. This month and next, SMITHSONIAN *looks at two such schools and how they work.*

For once, upon a raw and gusty day,
The troubled Tiber chafing with her shores,
Caesar said to me, 'Dar'st thou, Cassius, now
Leap in with me into this angry flood,
And swim to yonder point?'

It was a raw and gusty day in mid-Atlantic as the QE II heaved and hunched its way through an equinoctial storm. The lines seemed appropriate for me to recite to the few stalwart passengers huddled in the bar. There was a lady sitting nearby, and without hesitation she joined the iambic swell, declaiming:

Photographs by Richard Howard

. . . Accoutred as I was, I plunged in
And bade him follow; so indeed he did.
The torrent roar'd, and we did buffet it
With lusty sinews, throwing it aside
And stemming it with hearts of controversy:
But ere we could arrive the point propos'd,
Caesar cried, 'Help me, Cassius, or I sink.'

Measure by measure we followed the bard. What the other passengers made of this, I do not know. But for me and my fellow student of *Julius Caesar*—she was Mary McGrory, the Washington columnist—it was the most natural thing in the world. I had spent six years at the Boston Latin School, and she six at its sister school, Girls' Latin, where they had started us memorizing hunks of Shakespeare before we were 12 years old. And whatever you learn at Boston Latin is supposed to stay with you, available for use, all the years of your life.

That is the way it has been for 350 years. Boston Latin, founded in April 1635, is the oldest public school in the United States—it is probably the oldest surviving educational institution in the Americas. It has moved half a dozen times around the city of Boston, from the living room of its first master's house to its present dingy red-brick fortress built in the Fenway in 1921. There were 12 pupils in 1635; there are 2,300 today. But the educational standards and approach have remained remarkably constant. If a Bostonian of 1635 came back to Earth today, he'd find that one of the few things remotely familiar would be the Boston Latin School.

The Puritan colonists had been barely five years in Massachusetts, *hic in silvestribus et incultis locis* hacking a toehold of farmland and pasture out of the primeval forest, when they turned their minds to educating their youth: "One of the next things we longed for, and looked after was to advance *Learning* and perpetuate it to Posterity," as it says in *New Englands First Fruits,* published in 1643.

At a general meeting on February 11, 1635, the infant town of Boston voted "that our brother Philemon Pormort, shall be intreated to become scholemaster, for the teaching and nourtering of children with us." By April he had his books ready, and the first scholars were parsing Latin sentences in his home.

The kind of school it was going to be was settled very quickly, in the stormy wake of the colony's first great religious controversy. Like Sir Henry Vane, the Governor, and many leading citizens of Boston, Brother Pormort was a visitor in the parlor of Mrs. Anne Hutchinson, a woman of "a nimble wit and voluble tongue," a prophetess favored with revelations that enabled her to settle in a moment such vexed theological questions as, Is sanctification evidence of salvation? "Come along with me," said one of Mrs. Hutchinson's disciples to an orthodox believer named Edward Johnson, "I'le bring you to a Woman that Preaches better Gospelle than any of your blackecoates that have been at the Ninneversity . . . one that speakes from the meere motion of the spirit, without any study at all."

For orthodox believers, that way led to anarchy and madness. If any quick-tongued housewife could get wisdom directly from God, what was the use of the learning they had painfully acquired? How could order and decency and right doctrine be maintained if the winds of inspiration were allowed to blow where they willed? On November 2, 1637, Mrs. Hutchinson was declared by the Great and General Court to be "a woman not fit for our society," and she had to depart into the wilderness of Rhode Island. Philemon Pormort departed, too. As historian Samuel Eliot Morison says, there was nothing unusual about such proceedings in the 17th century, except in the failure of the authorities to put anyone to death. If the Hutchinsonians had triumphed, they would have been just as intolerant as their opponents. Their banishment, says Admiral Morison in tight-lipped Bostonian prose, spared Massachusetts "an era of frontier revivalism and hot-gospelling."

Hic scriptor praemium a schola latina bostoniensi propter fidelitatem donatum anno 1931 accepit.

Black coats, tight lips, traditional learning

That was not Boston's way. From 1637 Boston's way was irrevocably set: black coats, tight lips, hard heads, self-righteousness and, above all, traditional learning. Boston Latin was to provide the training for it. Following Pormort's departure the school was put under the direction of a Mr. Daniel Maude, "a good man, of a serious spirit," and under him began the traditions of discipline, application, constant study, constant emulation, which have continued to this day. Cotton Mather, who entered in 1669, noted that when scholars were admitted to Harvard, those who had been to Boston Latin were "generally the most unexceptionable," and ever since, the school has prided itself on its college admissions.

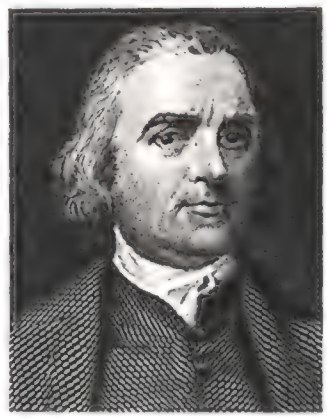
There is a common misconception that the Boston Latin School, like Harvard College (which, according to BLS chauvinists, was opened three years after BLS to take care of its graduates), was a sectarian divinity school for producing literate preachers. In fact, the Puritans insisted on a learned clergy, but the clergy got its theological learning in advanced professional schools, just as lawyers did. Before acquiring profes-

A Distinguished Gallery of Old Boys

Sam Adams

(1736)

Though Sam was not noted for his conviviality at BLS, he won renown by throwing the Boston Tea Party. A natural politician, agitator and Son of Liberty, he later signed the Declaration of Independence (below his fellow BLS grad John Hancock).



Bernard Berenson

(1885)

An immigrant Lithuanian boy, B.B. excelled at Harvard and, after helping Mrs. Jack Gardner pick paintings for her Boston mansion, emigrated to Italy where he became America's first great art historian and master of the Italian Renaissance.

Leonard Bernstein

(1935)

America's man for all musics, Lenny played piano in school assembly, brought glory to BLS, as conductor, composer for ballet (*Fancy Free*), opera (*Candide*), as well as that star-crossed blend of street gangs and Shakespeare, *West Side Story*.

Robert Coles

(1946)

Author, teacher, and child psychiatrist, Dr. Coles won the classical prize and many other honors at BLS, later put high professional and reportorial skills to the service of social conscience. His most celebrated work is the five-volume study, *Children of Crisis* (1964-1980).

Ralph Waldo Emerson

(1819)

Despite his grounding in classics at BLS, Harvard and Divinity School, Emerson urged Americans to cast off the bonds of Old World Culture. Then as a revered poet and essayist, he preached self-reliance and a philosophy known as Transcendentalism.

Ben Franklin

(ex-1720)

The school's most famous Old Boy, Ben spent only one year at BLS before going to work at 10. He soon made his fortune as a printer, scientist (electricity), diplomat (in London, Paris), architect of freedom and ubiquitous American sage.

Nat Hentoff

(1941)

At BLS he was an apostle of jazz, went on to work for *Down Beat* and become a *New Yorker* writer. He graduated to concern for civil rights, was a director of the ACLU, now is a columnist preoccupied with threats to constitutional freedoms.

Samuel P. Langley

(ex-1851)

Like Franklin, Sam Langley stayed briefly at BLS but the school laid its mark on him. As scientist he pioneered in aircraft design, astronomy, the study of solar radiation, and served (1887-1906) as innovative Secretary of the Smithsonian Institution.

Cotton Mather

(ex-1673)

Precocious and high-strung, he entered Harvard at age 11, became a minister despite a deep interest in science and medicine. His most notable work is the *Magnalia Christi Americana*, an 850-page church history of New England.

Theodore H. White

(1932)

A celebrated journalist, Teddy played trumpet at school, got a summa at Harvard in history, was a foreign correspondent in China before becoming a Pulitzer prize-winning (1962) and best-selling author of five *The Making of the President* volumes.

sional training, before becoming a responsible member of the community, a young man had to learn how to think and how to express his thoughts, and for that he had to be taught how to read and understand what he was reading. That is why the core of the curriculum at the new school in Boston (as in any reputable school in England or Europe of the period) was Latin.

Latin was not just the international language of learning that enabled scholars from Poland, Spain or Connecticut to communicate. It was a remarkable pedagogical tool. The Latin taught in schools was an administrative language, designed by the legalistic and highly efficient Roman mind to clarify and reduce to order all the chaos of information pouring into a city that was then devouring most of the world.

The complexity of Latin syntax and the suppleness of Latin sentence structure made it ideal for organizing observation and thought. At least, so old Boston Latin believed and so it still believes. Today, whether you take the six-year course or the four-year course, you are required to study Latin, to parse and scan and conjugate and decline, to read and memorize, all the way up through four books of Virgil, every school day through junior year. (Senior-year Latin, a college-grade course, is optional.)

The curriculum gradually broadened as century followed century, to include mathematics (1814), English (1826) and modern languages (1852), history ancient and modern, and a smattering of the natural sciences (1876). But the principles remain. Latin School teaching has always depended heavily on rote, on memorizing of rules and lines, on orderly progression, on drill and repetition. In short, upon all those things that distress progressive educationists. Rules were and are taken quite seriously. I can well remember Mr. Russo in Class IV (ninth grade) laying down the laws of English prosody and setting us to write verses in iambic tetrameter. About the third stanza I began to be bored with the steady thump and tried sneaking a couple of trochees or anapests. "Stop right there," said Mr. Russo. "That is poetic license. When you get to be a poet, I will give you a license. In the meanwhile, you will write the way I tell you."

Latin School style was largely set by an early headmaster, Ezekiel Cheever, who spent 70 years teaching, many of them using an *Accidence* (Latin grammar) he compiled himself, which became the standard text of the day. Cheever has been described as a sober chiliast,

Editorial staff of *The Register*, the school literary magazine, was larger and less laid back in 1917 (left) than today. *Register* was founded by George Santayana in 1881.

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Physics lab at turn of the century (left) when the sciences were somewhat slighted.
At the right is senior Benz-ney Theodore, who just won early admission to MIT.

meaning that he expected the end of the world at any moment, but in the meanwhile went about his business conscientiously and on schedule. "He wore a long white beard, terminating in a point," said one of his students, "and when he stroked his beard to the point it was a sign for the boys to stand clear."

In three and a half centuries, recollections of old graduates have tended to focus on discipline and disciplinarians. A favorite subject was John Lovell, the headmaster who cried *Deponite libros!*—Put down your books!—when the Redcoats marched past the school building on their way to Lexington on April 19, 1775. Also Lovell's son James, who taught with his father. The two Lovells used to harangue the classroom, one from the northeast corner, one from the southwest, John urging loyalty to the Crown, James preaching rebellion.

Even today when old graduates reminisce, you will rarely hear them say of any teacher, "He really understood me." They are more apt to say, "He certainly taught me trigonometry and the ablative absolute."

For the boys of my generation, a strong memory remains of a Latin teacher named Mr. Cray—an aloof sharp-tongued man with a gift for putting hapless students in their intellectual place. The tale is told that one day he poked his nose out of his homeroom, No. 106, which is catercorner from the statue known as Alma Mater at the school entrance, and saw what he recognized as a former pupil come back to visit the old place. "And what have you made of your life?" he asked. "I am the president of Princeton University," said the grad. "Princeton must have lowered its standards," said Mr. Cray.

I have seen flourishing Boston lawyers and physicians turn a little pale under their Florida tans when the name of this old master comes up. But they are quick to add: "When you learned irregular verbs from that so-and-so, they stay learned forever."

There is so much that stays with you forever: you will always be able to recognize an anacoluthon in a Presidential press conference. You will always remember Cicero's "How Long, O Catiline" speech: *Quo usque tandem abutere, Catilina, patientia nostra?* You will never forget which seven French nouns ending in *ou* form their plurals in *x* (*bijou, caillou, chou, genou, hibou, joujou, pou*).

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BUCKLE UP FOR SAFETY

In the school's 12,000-book library, librarian Alice Fellows discusses source material with a student.

Boston Latin has always had its enemies. As early as 1711 there was grumbling among the citizens that the school was not helping their boys to become better merchants or sea captains or slave traders when they grew up, and a petition was drawn up demanding if "some more easie and delightful methods" of acquiring learning might not be found. The answer was quite crisp: there were no such methods. Back to the gerundive and the ablative absolute.

Repeatedly, the spiritual heirs of Anne Hutchinson —Transcendentalists, New Thinkers, hippies, progressive educationists, *et id omne genus*—have returned to the charge. They have accused the school of being rigid and soulless, of stifling creativity and turning out generations of greasy grinds. Or, taking another (and somewhat more recent) tack, they have accused it of being undemocratic, un-American, elitist. To get into the school at all you have to get high grades in an entrance examination. Such a system, critics say, siphons off all the bright young minds in the Boston school system. It guarantees that BLS will get the best teachers, too: they naturally gravitate toward a school where the students enjoy studying and where disciplinary problems are comparatively manageable. Since the Second World War, Boston, like other American cities, has seen its public school system deteriorate. The general opinion around town is that, except for Boston Latin, its high schools are still struggling and BLS is somewhat in the position of a cathedral rising out of a swamp. One type of mind has a neat prescription for such a landscape: tear down the cathedral and use the stones to pave the swamp.

Cicero and Virgil remained compulsory

Thus far the school, using a mixture of high principle and guile, has managed to shrug off or fight off such assaults. There was a close call in the late 1950s when, in the panic following Russia's Sputnik launch, many people were convinced that America was drowning in the humanities and needed a good dose of practical science and engineering. The Boston School Committee voted to make Latin an elective subject at the Latin School. "They want to turn us into a school for plumbers," said one old grad. A call went out to then Archbishop John Wright, class of 1927, and he came up from Pittsburgh to make a major and well-publicized address defending the eminent state and dignity of the "dead" language. Contemporary Boston still takes Archbishops seriously. Theological and electoral considerations probably played an equal part in making the committee change its mind. Cicero and Virgil remained compulsory.

In the 1960s when academic standards were being submerged all over America, Boston Latin stood

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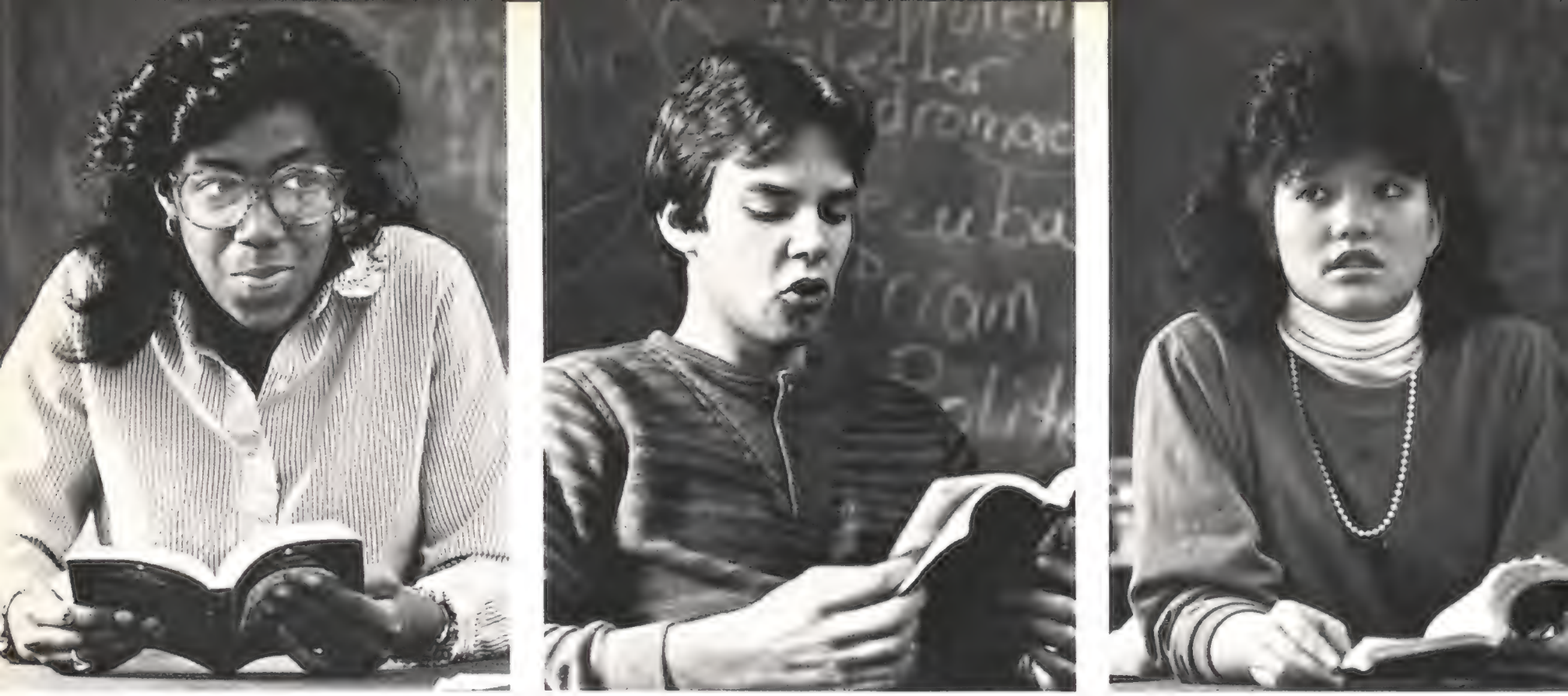

Three seniors consult *Odyssey* in Helen Karydas' comprehensive Greek class: from the left, Nichelle Grey, David Harris, Janice Chu. Greek is an elective subject, but students must take four years of Latin.

against the tide. "We wore our hair long to frighten our parents," says Philip Haberstroh, 1966, now registrar of the school, "but we had to pass our exams just the same." Discipline and Latin have come back into fashion. These days pilgrims arrive from all over the country to visit Dr. Joe Desmond, head of the BLS classics department, to see how he does it.

Graduates like John Wright (who became Cardinal in 1969) have always been ready to rally to the school's defense. Whatever resentments they may have had against their alma mater, whatever anger and frustration they may have felt when they were in her massive arms, they all seem to get progressively fonder of her as they grow older. Since the 17th century they have been coming forward to testify that whatever success they have achieved in life is owing to the stern training they received at Boston Latin.

Whatever the reason, there has been success in plenty. Latin School graduates have been the leaders of Boston from the start, and many have gone on to national or international fame. In the early days, the school provided the men who shaped and guided the Puritan commonwealth: divines like Cotton Mather, presidents of Harvard, governors of Massachusetts Bay Colony. In the 18th century, it bred many of the great names of the American Revolution: Benjamin Franklin (class of 1720), Samuel Adams '36, John Hancock '52. In the early 19th century when Boston liked to think it was the Athens of America, and with some justice, as well as the hub of the Universe ("Why should I travel?" asked the legendary lady in her house on the river side of Beacon Street, "I am already here"), the school instructed Ralph Waldo Emerson (class of 1819) and a legion of men with rolling three-pronged names who helped set the standards for the young Republic: Charles Francis Adams, 1822, the diplomat; John Lothrop Motley, 1829, the historian; Samuel Pierpont Langley, 1851, the aviation pioneer (and Secretary of the Smithsonian Institution); Henry Lee Higginson, the banker; plus senators, governors, mayors, merchants, judges, architects, professors, philanthropists, abolitionists, generals, archbishops. There was also Samuel Francis Smith, 1825, who wrote "America."

In the early centuries, of course, the students were mainly of Anglo-Saxon stock, Yankees. But by the late 19th century, the Yankees began fleeing to the suburbs as Boston was turned into what is now called opprobriously an inner city, occupied by noisy swarms of immigrants; first Irish Catholics, then Italians, Jews, Greeks, Poles, Armenians. By the 1920s a Yankee name was a rarity on the list of students in the school catalog. In the second half of the 20th century the former immigrants have been heading for the suburbs in their turn, and new waves have come in: blacks from the rural South, Hispanics, Chinese, Vietnamese, Cape Verdeans.

Boston Latin did not adjust to the immigrants—the immigrants adjusted to *it*. For the past 80 years the school has been a great gateway for the aspiring poor through which children of first- and second-generation American families, living in ethnic enclaves, in poverty or at least in modest circumstances, could march down the broad highways of American culture, politics, society. The school's chief function has always been to turn out those professionals, businessmen

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Headmaster Michael Contompasis, class of '57, has guided BLS through the trying years since 1977.

and civil servants who rise to the middle levels where the wheels of society are kept turning.

Most graduates are content to remain Bostonians. Some go on into the outer world where they have achieved considerable renown. Five of the best-known graduates of the past century or so, all in their very different ways, fit into the standard category. They came from immigrant families, they took the school as a challenge that sharpened their wits for the struggles ahead: George Santayana (1882), the philosopher and esthetician; Bernard Berenson (1887), the expositor of Renaissance painting; Joseph P. Kennedy (1908), financier, ambassador and patriarch; Theodore H. White (1932), old China hand and chronicler of John F. Kennedy's Camelot; and Leonard Bernstein (1935), the man for all musics.

Here is Santayana, writing for the school's 300th anniversary: "In spite of all revolutions and all the pressure of business and all the powerful influences inclining America to live in contemptuous ignorance of the rest of the world, and especially of the past, the Latin School . . . has kept the embers of traditional learning alive." Joe Kennedy used more down-to-earth terms: the place, he said, "somehow seemed to make us all feel that if we could stick it out at the Latin School, we were made of just a little better stuff than the rest of the fellows of our own age."

Intellectual breadth, said the philosopher. Intellectual pride, said the businessman. Between the two they sum up the Boston Latin tradition.

A tradition, of course, is only as good as what the last graduating class makes of it. What of Latin School today? I had not so much as seen the place in 50 years when I went back for a look last winter, and there were plenty of foreboding voices, old friends, *laudatores temporis acti,* to tell me everything had gone to hell since our day. "What can you expect," asked one of my old teachers, "in a world where secondary-school teachers rank lower in public-opinion polls than sanitary workers and make smaller salaries? In a world where people will tell you in all seriousness that it is the constitutional right of every American adolescent to get a high school degree?" (It has not yet been claimed, however, that there is an equal right to a football letter.)

On the spot, things did not look quite so ominous. The physical plant has not changed perceptibly in half a century. The three-story brick building with its towering Corinthian columns in the Fenway looks as solid and as shabby and as crowded as ever. There is still not quite enough room for an enrollment in six grades of 2,300. There never has been enough equipment. The science labs had to be cannibalized from another school being torn down. The gymnasium would hardly be adequate in a country grade school, and physical education is apt to consist of a leisurely jog around the ground-floor corridors. The recreation yard still doubles as the faculty parking lot.

Somewhat more tenderhearted methods

The most striking change is that the school has been integrated, sexually integrated, for 13 years. In the old days of Girls' Latin, girls had to wear dresses, and boys jackets, but those days are gone. Discipline is a little looser, classrooms are not as oppressively silent as they used to be, the curriculum has been widened to take in such things as art and music and computer programming. And grade inflation—the idea that students will be encouraged if they get higher marks than they deserve—has taken its toll. Jacqueline Tibbetts, an assistant headmaster, agreed that something had gone out of the institution when grade scores were reduced to the abbreviated letter scale, A to F, from the old 1 to 100. She was leafing through old records the other day and she came across a boy who had achieved a score of 12 in Latin. "You can get an F these days and say it was just tough luck," she says. "You may have been just one percentage point below passing. When you had a 12 staring you in the face, there was no doubt that you had to do something about it if you wanted to stay in the school."

Even with the more tenderhearted modern methods, not everyone can make it in the school. There are tutorial programs and efforts to give individual help to boys and girls having difficulty adjusting. But if

they don't adjust, out they go: more than a quarter of each entering class does not make it to graduation.

"Tough but not insensitive" is how the current headmaster, Michael Contompasis '57, likes to describe the school's current style. "We want to maintain the old standards of self-discipline but we don't have to go about it in quite as inhuman a way." On the fundamental question, however, he is inflexible: "We can, and must, provide equality of opportunity, but we cannot guarantee equality of results—the results are up to the individual student." If you want to get through Boston Latin, if you want to qualify for some kind of financial aid in going on to college (less than ten percent of Latin School families have the financial resources to send their children to college unaided), you have to work. Work means up to seven courses a day and at least three hours of homework.

Upward mobility an absolute religion

Ms. Tibbetts rounded up for me a random group of six seniors she picked out of the corridors between classes. There were only two native-born Americans among them: one of Italian ancestry, one a *rara avis* descended from Governor Bradford, the Pilgrim Father. One boy had been born in Rome, another in the Dominican Republic. One black girl came from Shropshire and a black boy from the Cape Verde Islands. They were all quite pleased with this United Nations note. "It's more like real life," said one of them. "I had admissions to St. Paul's and Milton Academy, but what would I have been doing in one of those ghettos, surrounded by nothing but preppies?"

What did they think, children of the '80s, of following an ancient curriculum, spending a good part of their youth learning a dead language, toting home several pounds of books every afternoon to spend hours with trigonometry, ancient history and those eternal irregular verbs? "You look at the kids from the other schools," said one boy in language that Joe Kennedy would have admired, "and sure, they aren't working, and they're having fun, but what do they have to talk about? They don't know what's going on."

History may be on the side of Boston Latin. "We like it," said the admissions officer of an Ivy League college. "It's a school where upward mobility is an absolute religion. BLS students work hard and achieve." The school still sends about 20 graduates a year to Harvard and some to MIT. For there are signs of revival in the old faith that rhetoric and the classics foster the very skills in logic, analysis and persuasion necessary to topflight lawyers, physicians and scientists. No wonder bumper stickers distributed to alumni for the 350th birthday read, in the BLS colors, purple on white: *SUMUS PRIMI*. We're Number 1.

Backed by a blackboard which is a palimpsest of learning, Sean Keohane tries Aeschylus.

Next month: the Bronx High School of Science

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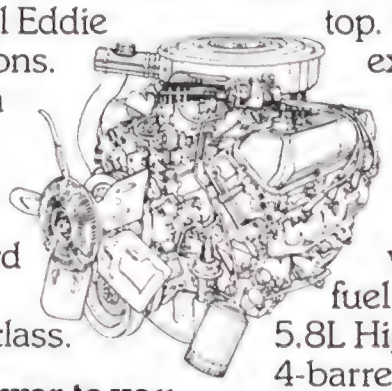

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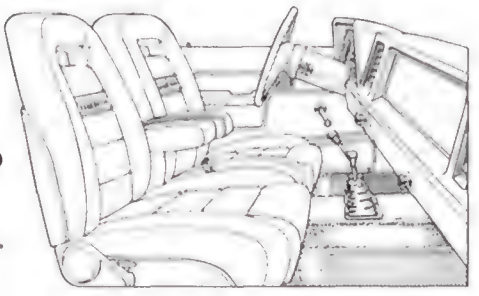

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By Edwards Park

A phantom division played a role in Germany's defeat

Forty years ago, a sneaky American outfit kept the enemy guessing with dummy tanks, phony troops, noise and some elaborate ruses

Early on a crisp September morning in 1944, two cyclists taking cover in a small French town near the Luxembourg border decided that it was safe at last to venture out into the countryside. The nighttime rumble of tanks had died away; *les Américains* seemed firmly in control. If one met them, one might even be given a little piece of *le chocolat*. So the men mounted up and swept along the road that passed the bivouac. They sniffed the smoke of cooking fires in the cold autumn air. They noted the usual scattering of grimy, mud-stained vehicles, partly hidden under tattered camouflage nets: a couple of trucks, some trailers and a few big M-4 tanks with their mighty guns poking out from the cover of trees and netting.

Then, a young American sentry stopped the pair. He was friendly enough, but firm: they must explain where they were going—and why. The Frenchmen replied as well as they could until, all at once, they stiffened and fell silent, their eyes wide in astonishment. For over the sentry's shoulder they saw four GIs in muddy battle jackets and dull-green helmets walk over to a monstrous tank and, with one man at each corner, simply pick it up, turn it around and set it down again. Thus—or so the story goes, at any rate—was the cover of the 603rd Engineer Camouflage Battalion broken and the security of a neighboring armored division imperiled at a critical moment in the Allied offensive. Fortunately, no damage was done.

The 603rd was one of four units that formed what was perhaps the most enigmatic outfit ever fielded in battle, a group called the 23rd Headquarters Special Troops. The 23rd's troops were "special," all right. They specialized in impersonating *other* troops. The war with Germany came to a close 40 years ago this month. For 268 days in mid-1944 and early 1945, the 23rd's 82 officers and 1,023 enlisted men pretended, at one time or another, to be the 5th Armored Division, the 4th Infantry Division, the 6th Armored Division, the 90th Infantry Division and many other Army outfits hard at work in the hedgerows and forests of northern Europe. With inflatable rubber guns and vehicles, with ever-changing shoulder patches, stencils to make phony signs, and with amplified recordings of heavy equipment in action, the 23rd played role after role. Its men fired only a few shots in anger, but plenty for the sake of theatrics.

The purpose of all of that razzle-dazzle was to fool the enemy and, by doing so, enable the troops that the 23rd was impersonating to sneak into new positions, to launch a surprise attack or in some other way to catch the other side off guard. Sebastian Messina, a radioman with the 23rd from Worcester, Massachu-

Illustrations by Arthur Shilstone

"The astonished Frenchmen saw
four GIs in muddy jackets walk over
to a monstrous tank and, with one
man at each corner, simply pick
it up, turn it around and set it down."

"John Hapgood took cover under a railroad car with fellow artist Phil Hornthal. As German shells crashed all around them, one of the men shouted sardonically to the other: 'The 603rd will never go overseas!' "

setts, likened his unit's modus operandi to the old football Statue of Liberty play, with variations. "Suppose the Umpteenth Division is holding a certain sector," he told a newspaperman after the war. "Well, we move in, secretly of course, and they move out. We then faithfully ape the Umpteenth in everything the Germans were accustomed to seeing them do or have —assume their identity totally. Then the Umpteenth, which the Boches think is in front of them, is suddenly kicking them in the pants ten miles to their rear."

Deception was used as a military tactic long before the Greeks slipped their wooden horse into Troy, but it didn't really come into its own, in a systematic and organized way, until World War II. The advent of sophisticated reconnaissance and intelligence techniques, together with unprecedented battlefield mobility, put a new premium on the possibilities of tactical spoofing. Field Marshal Bernard Montgomery pulled off an elaborate hoax in the British Eighth Army's decisive victory over Erwin Rommel's Afrika Korps at El Alamein in North Africa, and the United States deftly faked out Germany's intelligence experts prior to the Battle of Tunisia. The success of those exercises in camouflage and cover plans helped convince American strategists of the need for a chameleonlike ghost army in the European theater. Early in 1944, therefore, the War Department authorized the formation of just such an outfit, the 23rd.

Three units were hurriedly assembled from around the country for training and reorientation at Camp Forrest in Tennessee. The mission of the 23rd's Signal Company was to develop and employ radio counterintelligence tricks. The 406th Engineer Combat Company, a disciplined fighting unit trained in desert warfare, was put in charge of all-around security and tough construction jobs. The aforementioned 603rd Engineer Camouflage Battalion had already been experimenting with deceptive installations for nearly two years. It was given the responsibility for camouflage and dummy equipment. Yet another outfit, the 3132nd Signal Service Company, was trained separately at the Army Experimental Station in Pine Camp, New York, where it pioneered in the development of "sonic deception" techniques.

The 603rd epitomized the creative character of the 23rd. It was composed largely of artistic types who had been recruited from New York, Philadelphia and Chicago. Some of them had known each other while at-

In WWII, Contributing Editor Edwards Park flew real airplanes. Illustrator Arthur Shilstone was in the 23rd Headquarters Special Troops.

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tending various colleges and universities, and such prestigious art and design schools as the Pratt Institute, Cooper Union and the Art Institute of Chicago. The average IQ of the 603rd was 119, rumored to be the highest in the Army.

Many of the 603rd's recruits were destined to achieve fame and success after the war was over. There was a young fellow named Bill Blass, for example, who wanted to set himself up as a fashion designer some day. Others included Ellsworth Kelly, artist and an originator of "hard-edge" painting, whose work now hangs in the Museum of Modern Art; George Diestel, who became a famous Hollywood set designer; Art Kane, a well-known photographer; Arthur Singer, one of the country's most respected bird painters; and Arthur Shilstone, a distinguished illustrator whose work, appropriately enough, adorns this article. Still others became influential university professors, industrial designers and creative directors or illustrators with advertising agencies.

"I guess there's no accounting for taste"

Notwithstanding their artistic temperaments, the men of the 603rd were required to endure the torment and boredom of training, marching, drilling and KP duty like any other GIs. It was not a burden always nobly borne. One battalion mess sergeant gained notoriety for making KPs clean his filthy grease pits. "I want to be able to see my *face* in there!" he would bellow. "I guess there's no accounting for taste," an artist-soldier snapped back one day. "You just got yourself a whole week of KP!" the sergeant roared. Sometimes it all seemed a bit like Beetle Bailey.

For nearly two years, the 603rd was stationed at Fort Meade in Maryland, where it was required to do the same drills over and over, fixing camouflage nets and painting camouflage on trucks—an artistic accomplishment, Shilstone recalls, that "any chimpanzee could have done as well." As time dragged on, the men began to lose hope of ever leaving. "The 603rd will never go overseas," they repeated to each other so often that the phrase almost began to take on the significance of a unit watchword.

Gradually, the distinctions between the artists and the others began to blur. They all groused together, drank together and brawled together. But the differences never did vanish completely. A few of the troops filled their off hours sketching. One man kept a Stradivari violin in his barracks. A young dress designer, rich and spoiled, sat on his bunk eating chocolates and endlessly writing letters. One night long after taps, the stillness of a 603rd barracks was broken by the sound of low voices engaged in muffled but earnest conversation. "And there we were at Toots Shor's," one man whispered, "when Mother came in wearing this blue sequin dress. . . ."

When the 603rd, sketchbooks and all, finally pulled up stakes at Fort Meade and arrived at Camp Forrest in January 1944, it was met by Colonel Harry Reeder. A savvy career man, Reeder had studied at a service school in Paris and commanded a crack armored-infantry regiment. Nothing in his experience had prepared him for his assignment as head of the 23rd. In a wonderfully engaging official history of the unit, Frederic Fox, who was a captain in the Signal Company, recalls the scene this way: "Since no one knew how a deception unit was supposed to operate, the training program was not easy to write. . . . Officers who had once commanded 32-ton tanks, felt frustrated and helpless with a battalion of rubber M-4s, 93 pounds fully inflated. The adjustment from man-of-action to man-of-wile was most difficult."

Difficult or not, the adjustment had to be made. The men practiced setting off flash devices, cannisters with small charges triggered by electricity, to simulate artillery barrages. They considered how to achieve large-scale deception using their radio equipment. They learned how to deploy their dummy vehicles and artillery weapons, which were inflated with small motor-operated compressors. The signal-service unit training up in New York worked on its own unusual repertoire: amplified recordings of tanks, half-tracks and jeeps that would be used at night to fool the Germans into thinking that entire armored divisions were on the move.

Then, one night in early May, the main body of the U.S. Army's first and only tactical-warfare deception unit trooped aboard the USS *Henry Gibbons* in New York harbor and embarked for Great Britain. There the 23rd bivouaced for a month in six-man tents on

"The tank dummies were always inflated at night; it took about half an hour using compressor pumps."

Shattering old ideas about safety.

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the elegant grounds of a Victorian manor near Stratford-on-Avon. The British called the place Walton Hall; the GIs called it Mouldy Manor. "Training by all units was continued," Fox notes in his chronicle, "with considerable emphasis on athletics and recreation." Parties were held. Some of the men attended Shakespearean productions at Stratford; others passed the time relaxing at the Leamington Spa.

After about half of the command had departed for France, the remainder, some 600 men, spent a week awaiting their turn at Charborough Park, the rambling estate of Adm. Lord Reginald Ernst-Ernle Drax, KCB, DSO. Often, while the enlisted men watched deer and played baseball on the manicured lawns, the Admiral invited the officers in to enjoy a glass of port and a warm bath. Everything went swimmingly until the day before the men pulled out, when their chagrined host announced haughtily: "Someone has *beeeen* in my sherry!"

It took two months, two planes and nine ships to transport the entire unit to France. The first detachments hit the beach shortly after D-Day and four men were wounded. Victor Dowd, a platoon sergeant with the 603rd and now an illustrator living in Connecticut, touched down with his platoon on Omaha Beach in a C-47 transport plane at D-Day-plus-seven. He wondered why there were nurses on the plane and then he saw the wounded waiting on the beach. Not long after that, the reality of warfare came home to John Hapgood—who was a corporal with the 603rd and is now an artist in New York City—when he took cover under a railroad car with fellow artist Phil Hornthal. German shells were crashing all around them. Between explosions, one of the men shouted sardonically, "The 603rd will never go overseas!"

The 23rd's acting debut, Operation Elephant, was greeted with mixed reviews. It took place in the forest near Cerisy-la-Forêt, France, in early July and involved about 400 men who were assigned the task of simulating combat elements of the 2nd Armored Division while that unit secretly took up a new position. German units were maintaining a defensive position nearby. As the armored division moved out, the 23rd moved in, replacing real tanks with dummies and substituting rubber artillery for steel weapons.

Did it work? An official digest of the 23rd's operations concludes that the deception was effective because the Germans, expecting an attack in the vicinity where the 23rd was operating, held their position while the U.S. tanks made their move. However, historian Fox suspects that "little good was done." The main problem had to do with the fact that the 2nd Armored Division carried out its move in broad daylight with no attempt at secrecy. The need for better liaison and stricter camouflage measures—borrowed shoulder patches, simulated supply dumps, and cover stories concocted for consumption by enemy collaborators—was assiduously observed from then on. It wasn't long, in fact, before the 23rd had a voluminous

"The men suffered many a bloody finger sewing bogus shoulder patches on jackets before going into action."

file on visual identifications and the men suffered many a bloody finger sewing bogus shoulder patches on their uniforms before going into action.

In Operation Brest, which took place outside the great French port city in late August, the 23rd put on a terrific show. Its principal objective was to bluff the Germans into surrendering the city. The 23rd was supposed to impersonate two tank battalions and a field artillery battalion. This it did, augmenting real units already in place with "troops," using dummies, spoof radio installations and a variety of misleading special effects. The 23rd kept up a pretense of routine firing by setting off its flash cannisters; as was often the case in subsequent operations, a few authentic weapons remained in place to add substance to the sham.

On three successive nights, men of the 23rd approached within 500 yards of the enemy lines and projected their amplified recordings of tanks approaching, taking up positions and withdrawing. Engines roared. Gears clashed and ground. Voices shouted in the dark—orders, counterorders, frustrated cursing at yet another Army snafu. Friendly troops a mile away were completely fooled and so, apparently, was the enemy. The dummy flash batteries drew repeated counterfire and the German commander at Brest, Gen. Herman B. von Ramcke, later testified that he had been taken in by the armored act. Von Ramcke, with a force of approximately 38,000 men—17,000 more than U.S. intelligence estimated—had already made a decision to stand and fight. But even though Brest did not fall until mid-September, the 23rd's theatrics were successful.

Onion soup, Cointreau and a cache of cognac

The American offensive began to bog down, but in eastern France the 23rd kept on the move. Its men enjoyed onion soup and Cointreau in Torcy, uncovered an immense German cache of cognac in Les Garangers and bought perfume in Paris. In southern Luxembourg, they assumed the guise of an armored division and managed to checkmate a duped German infantry division for seven days. In Belgium, the 23rd realistically simulated still another U.S. outfit ostensibly lolling about at a rest camp. The unit supported a "river-crossing demonstration" near Uckange, France, facilitating a surprise crossing of the Moselle elsewhere by the U.S. 90th Infantry Division. After the German breakout in early December, the Great Deceivers used their bag of tricks to help cover the movement of an infantry division into the Bulge.

As Sebastian Messina pointed out, much of the 23rd's energy was devoted to obscuring the movement of other troops. In a typical cover operation, the 23rd's actors stayed in plain sight in the area they were supposed to be holding. They kept fires burning at night and visited supply dumps regularly. Having been briefed on the recent history of the outfit they were "playing," they chatted with civilians about things anyone in the real unit would know. Arthur Shilstone clearly recalls riding around villages in trucks for hours. At the rear, the two outside men would wear the proper patches and no one could see whether the rest of the truck's complement of 12 was inside the canopy or not.

"Troops dreaded the sight of limp gun barrels at first light, when enemy reconnaissance planes flew by."

When impersonating an armored unit, the 23rd often used half-tracks to scar the ground with tread marks like those of tanks. Then the rubber tanks would appear, partly hidden by netting and sometimes augmented by a real tank or two. The dummies were always inflated at night, which took about half an hour using the compressor pumps. As the air entered, they would squirm like sulphur snakes.

There were problems, of course. Since the dummy equipment was positioned in the dark, an inflated tank would sometimes be discovered in the morning facing the wrong way—a dead giveaway to aerial reconnaissance. (That's why those two French cyclists saw a tank being picked up and turned around.) The morning sun could cause trouble, too. One day some rubber planes began collapsing with a series of loud reports because the sun-heated air had expanded. There was trouble with leaks, too. The troops dreaded the sight of limp gun barrels at first light, when the German reconnaissance planes usually flew over.

It was difficult to gauge the effects of the 23rd's operations. There were times when they appeared to have no impact whatsoever. There were other times when they confused friend more than foe. Often enough, though, the Germans were completely hoodwinked. Prisoners spoke in awed terms of an "elusive" division. A map overlay captured before one engagement showed that the enemy had mistakenly positioned a U.S. unit right where the 23rd wanted them to think it was. Even Axis Sally, the notorious German radio propagandist, was taken in by that ploy.

Given its flair for the dramatic, it was perhaps inevitable that the 23rd's most impressive battlefield performance would be its last. In March, the United States crossed the Rhine at Remagen, but the Ninth Army was held up near the river at Viersen, not far from the Dutch border. One of the Ninth's three corps moved north under the cover of darkness and prepared, in absolute secrecy, for a real assault on the Rhine. The 23rd teamed up with the Ninth's other two corps to engage in a bogus build-up designed to convince the enemy that a crossing would be attempted near Viersen in April. Engineers built facilities and paraded about with bridging equipment. Medical installations were set up and a vehicle control center broadcast news of heavy traffic. The 23rd's "notional divisions" made a brazen show of themselves around Viersen. Each one had nearly 400 rubber vehicles, including five liaison planes, and aerial photos of their installations looked remarkably authentic. All of the 23rd's sonic tricks and special effects were brought into full play.

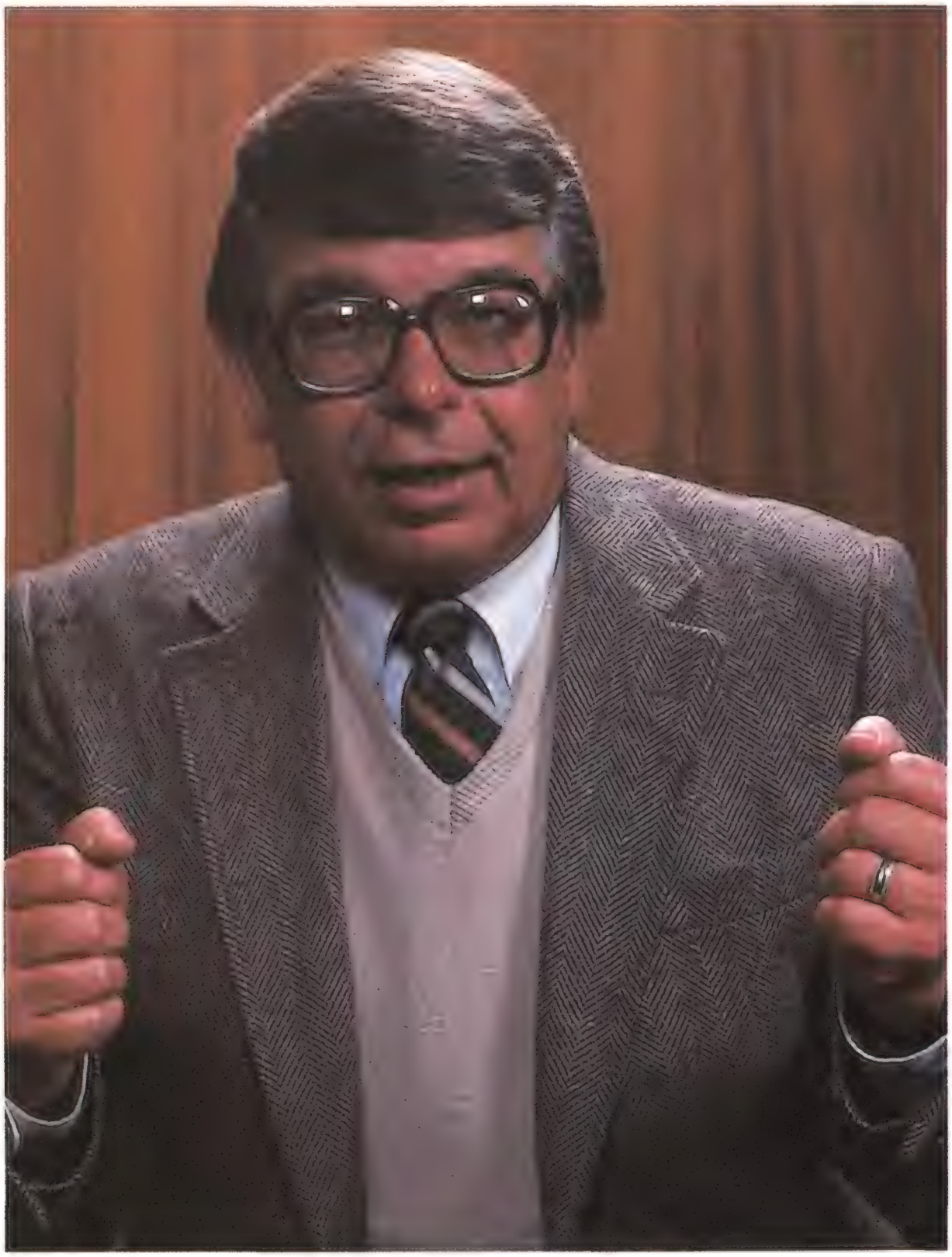
It was a show that would have warmed the cockles of Cecil B. DeMille's heart, and it worked. The real Rhine crossing in March came as a complete surprise to the Germans and many American lives were saved. For its efforts, the 23rd received the next best thing to an Oscar—a formal commendation for "careful planning, minute attention to detail, and diligent execution" from the Ninth Army's commander.

The 23rd was inactivated in September 1945. Unlike many returning soldiers, whose exploits had been emblazoned across the pages of the nation's newspapers, the men of the 23rd came home to discover that Americans didn't know any more about them than the Germans had. The reason: everything they'd done had been classified "top secret." But at least to the inevitable question, "What did you do in the war, Dad?" veterans of the ghost army could honestly respond: "I blew up tanks and guns, Son."

"They drove around villages in trucks for hours. At the rear, the two outside men wore the proper patches."

Arthur Shilstone

WHAT SHOULD YOU
WORKING "PARTNERSHIP"



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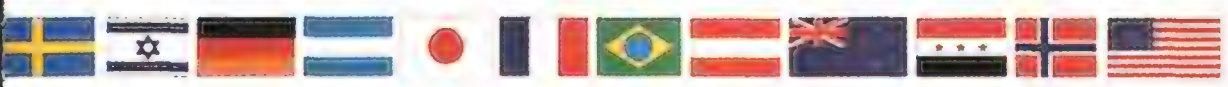

HEWLETT PACKARD

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Leaf of this Amazonian Melastomataceae (above) has three main veins, unusual in other families. Spiral form of tiny Thai sedge (top right), only one inch in diameter, keeps leaves from shading others. Jamaican poinsettia's red bracts (right) are petal-like leaves.

A world of leaves: familiar forms and surprising twists

A leaf by any other name—tendril, thorn, spine, needle, spathe, bract—may be the same basic plant part, changed by adaptation

When most people look at an orchid or an aster, their eye is caught by the flower. Few would look first at the leaves. But Smithsonian photographer Kjell Sandved has spent the past 15 years doing just that—looking at the amazing variety of forms that leaves take in the world of plants. And when Sandved speaks of the world of plants he speaks as a veteran traveler through that world—his camera has been aimed at leaves in the Americas, Africa, Southeast Asia, Australia and the Pacific islands. When he finally began to sort his transparencies, there were more than 10,000 to go through. From these he picked 300 which appear in his new book, *Leaves*, with a comprehensive text by Dr. Ghillean Tolmie Prance, Senior Vice President for Science at the New York Botanical Garden. Published recently by Crown in New York and Thames and Hudson in London, *Leaves* is the first book of its kind.

The selection of photographs here and on the following pages gives only a glimpse of the remarkable diversity Sandved saw on his numerous botanical odysseys. No two leaves are alike, he learned, but there is an underlying principle in the design of all leaves, whether they are growing on the mountaintops of Borneo or in the rain forests of Brazil—their form and function are always connected.

Some examples of this principle are obvious, and very impressive. The girderlike ribs, or veins, on the underside of the leaf of the royal water lily, enabling it to bear substantial weight, proved so fascinating to architects that this structure was the inspiration for the design of the Crystal Palace in London, built for the Great Exhibition of 1851.

As their functions become specialized, some leaves are so modified in form that they are scarcely recog-

Photographs by Kjell B. Sandved

nizable as leaves. The spines of cacti are actually vestigial leaves; the bulb of an onion is a cluster of specialized leaves. Thorns of spinous plants and tendrils of climbing plants are often modified leaves, as are the needles of conifers and the bracts (small, green scalelike structures) at the base of flower stalks that often serve to protect young buds. According to Dr. Prance, the close association of leaflike bracts and even more modified flower petals is a clue that all the parts of a flower are actually "modified leaves that have evolved from primitive plant forms into a unit with a very special function, that of reproduction."

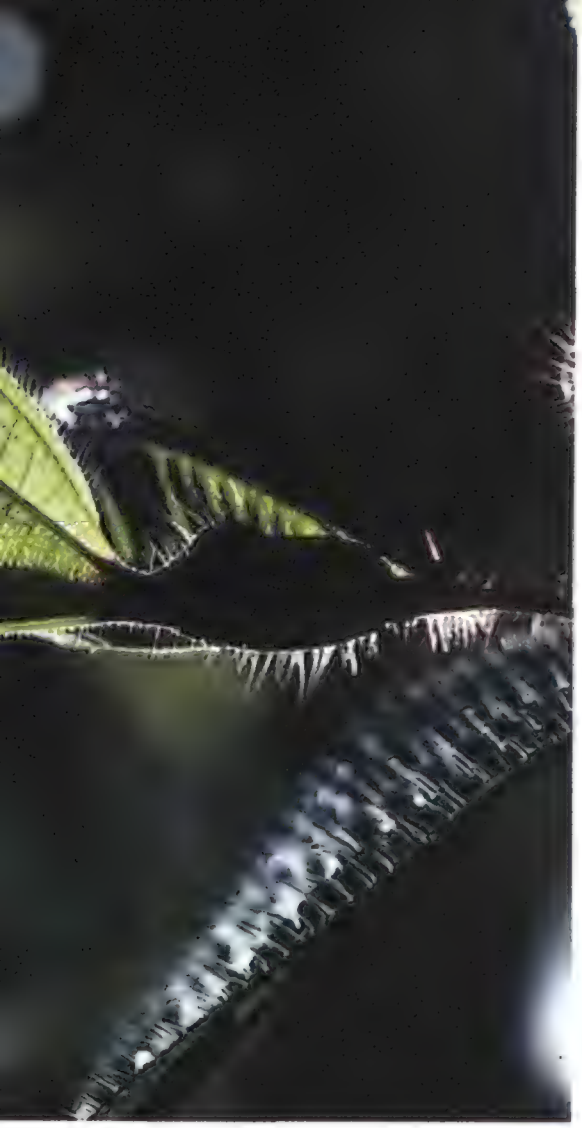
In some plants, such as the poinsettias and bromeliads, bracts are further modified to resemble flower petals and attract pollinators. The flower of the poinsettia is only the small yellow core nestled at the center of its flowery red bracts. The ultimate in bracts is the hard, woody sheathing in palms, called a spathe. The spathe of one Amazonian plant is so large that it is used as a makeshift canoe by local tribes.

As the pictures in *Leaves* provide a survey of varying forms, the text adds to one's appreciation of many aspects of form and function often obscured by scale. Stomata, for example, are minute breathing pores which can open and close to allow leaves to "breathe," taking in and releasing gases. It is not unusual for a square inch of leaf surface to have a quarter of a million of these tiny pores; and a single cabbage leaf has about 11 million of them.

Or consider, when you rake them next fall, the vast quantities in which leaves occur: an average apple tree produces as many as 100,000 leaves, an oak, 700,000—and the nearly extinct American elm, about five million at maturity. Anyone leafing through this book is likely to agree with Luther Burbank, who said, "The most wonderful thing in the world to me is this: the leaf of a growing plant."—*Diane M. Bolz*

Leaves of *Alocasia cuprea* change color with age. Color of young plant may be defense against predators.

A leaf of *Drosera*, one of carnivorous sundews, is covered with glue-secreting sticky hairs to trap insects.



Melastomataceae from Brazil has inflated ant cavity at base; ants protect leaf from other predators.

Another species of Melastomataceae shows how varied leaves can be, even in same family.

Colorful vein pattern may attract pollinators to this variegated (various colored) leaf of Himalayan orchid.

Water drops magnify protective hairs of water fern *Salvinia auriculata.* Generally a nuisance, this fern is now being used to generate methane.

Marsilea mutica from New Caledonia, also a water fern, has lost fernlike look in its adaptation to aquatic environment.

Leaves of blue amaryllis, found only in the Organ mountains of Brazil, have distinctive red margins. Plant is widely cultivated for its rare blue flower.

Mon.

Tue.

Thur.

Fri.

The week Newsweek readers began firing at Will.

The week was January 12th, 1976. The subject: "Knute Rockne for President."

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Which brings us to our point: when a magazine starts striving for excellence, where there's a Will, there's a way.

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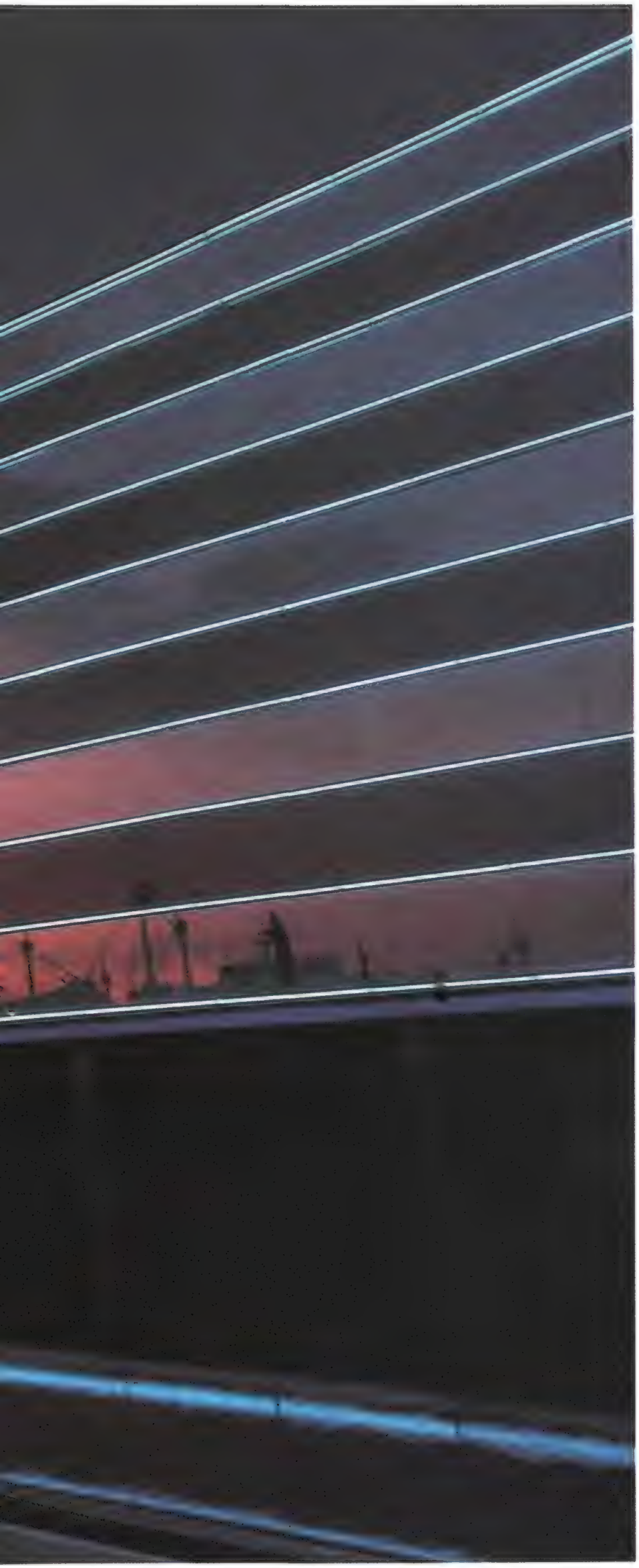


By Lewis Simons

A high-tech Expo opens in Japan's 'City for Science'

Behind the dazzling displays of technology stands a research metropolis where robots run factories and earthquakes occur indoors

Science Expo '85, Japan's high-tech world's fair which just opened in the city of Tsukuba (pronounced Scuba), introduces visitors to a metropolis that sounds like a science-fiction fantasy of the future. Imagine a clean, spacious city where thousands of scientists, educators and technicians have been assembled to work in the most advanced laboratories on research designed to affect life in the next century—building the world's smartest computers and most efficient robots; controlling nature's elements from the gene and atom to earthquakes and deluges; developing faster, cheaper telecommunications systems and space shuttles.

But this is not an imaginary city or a futuristic pavilion at the Expo; it is actually the place where Science Expo '85 is being staged. Tsukuba Science City, as it is officially known, was conceived and built by the Japanese government to bring together in one place some of the best minds in the country, and to serve as a center for new industrial development. In the earlier decades of this century, the Japanese had a reputation as ingenious copycats. More recently, they have been perceived as a people with the ability to capitalize successfully on basic research that had often been done in the West. Tsukuba could change all that by providing a fertile ground for fundamental, inno-

Neon cube "floats" through solid building at Expo '85 —an illusion created by reflection in mirrored facade.

Photographs by Brian R. Wolff

Japan's 'high-tech paradise'

Cloth-wrapped tree, sculpted in metal, stands in front of Dai-ichi Hotel and Tsukuba's new cultural center.

vative science. Indeed, among its own talented residents, Tsukuba is somewhat wryly referred to as "brain city."

Now two decades old, Tsukuba was built from scratch amid rice paddies and cabbage fields just 40 miles away—but a world apart—from the megalopolis of Tokyo. Forty-six government-run institutions and a university have opened their doors at Science City, which is one of only two such settings in the world—the first was set up at Akademgorodok in the Soviet Union in the early 1950s. Already Tsukuba has produced some genuinely innovative developments in computer sciences, robotics, laser technology, genetic engineering, medical treatment and some less glamorous areas such as how to predict and avoid mud slides. There are, however, hints of trouble in this planned technological paradise, which has not yet met the expectations of its creators.

Tsukuba's broad, straight boulevards and tree-shaded walks usually are empty, except for the occasional housewife on a bicycle wending her way to her spacious and efficient apartment from the clean and well-stocked supermarket, or the lone car rolling in splendid isolation from one sprawling scientific complex to another. The crawling traffic jams, the pollution, the teeming sidewalks, the cramped flats, the breath-restricting subways of Tokyo and Osaka seem a million miles away.

Green lawns, clean air, but it's not "home"

Sound good? Perhaps so to an American who loves the wide-open spaces. But here in this small country, where togetherness is a traditional way of life, the lone Japanese is a lonely Japanese. Many Tsukuba-ites long for nothing more than to be packed together, to swarm in huge crowds down narrow sidewalks, to sit shoulder to shoulder in unimaginably tiny cafés and restaurants, warming belly and spirit with *sake* and rich stews, burnishing the personal relationships of a lifetime with the butcher, the baker, the local policeman. And this is what the residents of Tsukuba say they miss in their scientifically engineered environment: it may be a city of brains, but it has no heart or soul.

"I feel spiritually disjointed here," said Dr. Shigeru Yamane, a research scientist in the Tsukuba Electrotechnical Laboratory, a facility with a $37-million annual budget provided to finance the race with the United States for superiority in supercomputers. "Despite the space, the green lawns, the clean air—or maybe because of them—I just don't feel at home here the way I did in Tokyo. It's hard to explain to a foreigner, but any Japanese understands—we Japanese like being close together."

The original plans for Tsukuba called for a popu-

lation of 200,000 by now and 220,000 by the end of this decade. Half of this population was supposed to be directly connected to the brain city. But only about 30,000 people affiliated with the scientific community —7,000 scientists and technicians and their families— have moved in. Another 109,000, mainly local residents, continue to live in the rural area surrounding the city's stark brick-and-steel structures.

Many residents of the so-called brain city complain that they don't like their children going to school with the children of farmers and blue-collar workers. The school issue is a central element in keeping many Tsukuba researchers from moving their families in. Many continue to live in the Tokyo area, commuting as much as four hours a day by a combination of subways, trains, buses and taxis. Others leave their families and move in alone, joining a group gloomily self-described as "Tsukuba bachelors."

"It's very common for Tsukuba bachelors like me to leave our families behind when we accept jobs here," said Masao Matsui, director of the Tsukuba Center for Institutes. Matsui has lived here for two years, returning to his wife and two teenage children in their suburban Tokyo home only on weekends. "The best schools are concentrated around Tokyo and many of us just don't consider it fair to our children to force them to move into new, and probably inferior, schools just because we're changing jobs," he says.

This has undoubtedly contributed to the slow response of Japan's private industry to Tsukuba's blandishments. Only a handful of private firms have set up facilities in the Tsukuba area in recent years with the expectation that being located around the brain city would create a symbiotic relationship between industry and science. Mitsuaki Higashi, product-marketing manager of Intel Japan, a branch of a major Silicon Valley semiconductor producer, is mildly positive about the benefits Tsukuba offers his company's new design center, which employs 200 people.

"We get some graduates from Tsukuba University coming to work here and some undergraduates spend time with us as summer interns," he said. "But as for any kind of exchanges with the researchers in the government labs, there's very little, almost none." Part of the problem here is that, as civil servants, employees of individual Japanese government agencies feel highly competitive and are loath to share information with staff members of other organizations.

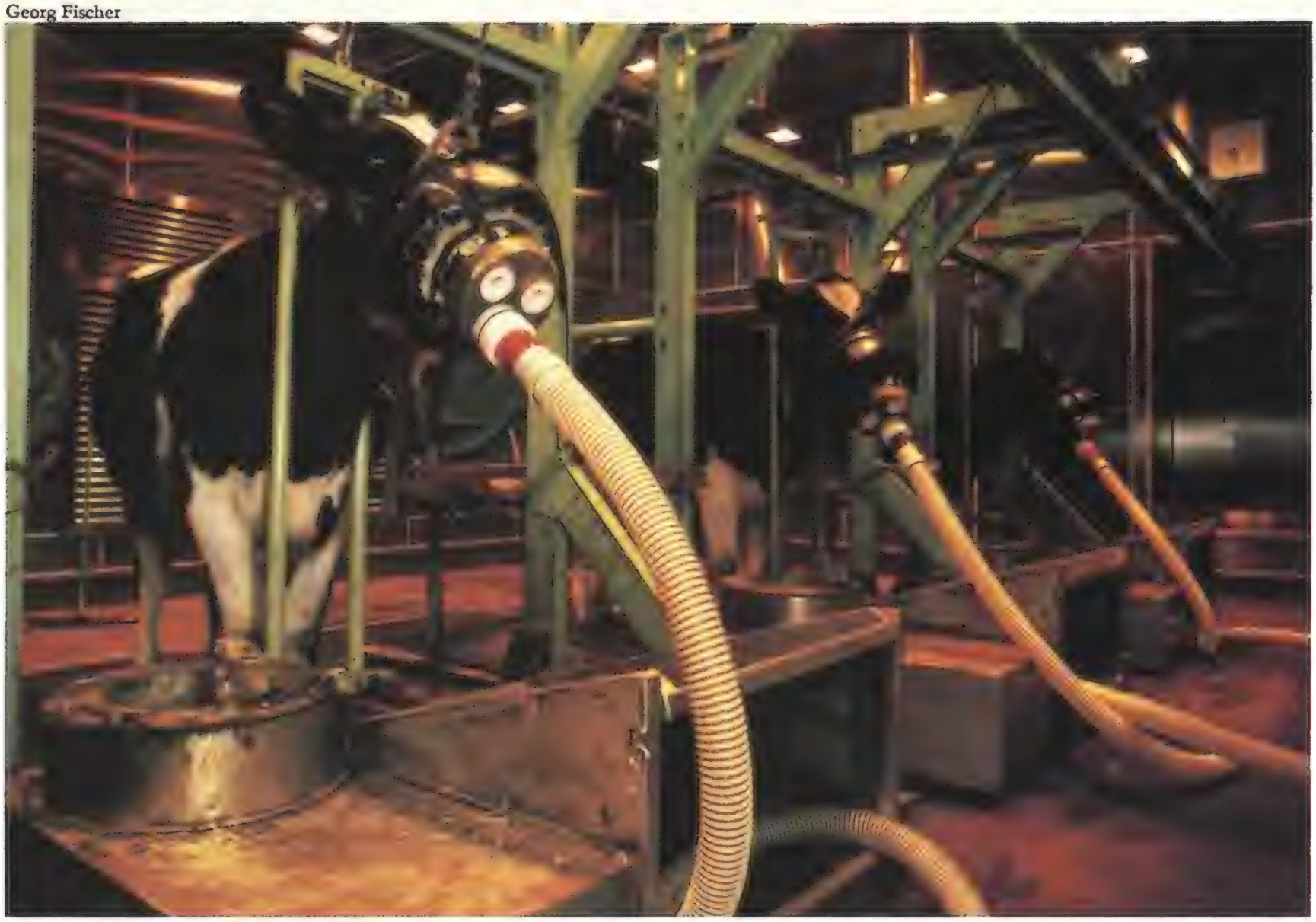
Personally, Higashi said, he rather enjoys living out in the country. "I suppose I'm not a typical Japanese," he acknowledged with a grin, "because I don't drink. I

Lewis Simons is Tokyo correspondent for the San Jose Mercury. *His last article for* SMITHSONIAN *was about New Jersey's Pine Barrens, in July 1983.*

Intel executive Mitsuaki Higashi moved to Tsukuba and built a house—an "impossible dream" in Tokyo.

Local laborers take tea break on expanse of parking lot being cleared for Expo; land was formerly a sod farm.

Georg Fischer



In its test stall at Tsukuba's Institute for Animal Husbandry, cow breathes in gas mask as composition of the air it exhales is analyzed. Stall is part of the "zootron," a room which simulates varying climates.

spent a year in Silicon Valley and got used to driving long distances. And because land prices here are relatively cheap I've been able to build my own house—something I couldn't even dream of doing around Tokyo. The cheap land is a major attraction to companies needing to build large facilities, too." The 245-square-yard plot on which he built his modest two-story house cost about $64,000. In suburban Tokyo such property would cost about $370,000.

In hopes of drawing more people and more attention to Tsukuba—and more industry—the government of Japan decided five years ago to stage an international exposition at Tsukuba. Science Expo '85, which is scheduled to run for six months, has the broadly misleading title of "Dwellings and Surroundings—Science and Technology for Man at Home."

Set in a geometry student's fanciful daydream of pastel cones, domes, globes, pyramids, cylinders and cubes, Expo provides considerably more in the way of Disneyesque, family-style entertainment than it does a glimpse into the 21st century. Fun, not state of the art, is what Expo is all about, though some of the fun is created by technology that has serious applications.

Take robots. There are dancing robots, car-driving robots, a robot that tickles the ol' ivories, a stair-climbing robot, a pair of courting robots, robot families and their neighbors. Then there's the 15-foot-high "Fanuc Man" by Fujitsu which shows brute strength by hoisting a 440-pound barbell overhead with two mechanical hands, and then demonstrates delicate manual dexterity by assembling a seven-part miniature of itself just ten inches tall.

The 20 million Expo visitors expected by the organizers can take fantasy journeys into space surrounded by mammoth three-dimensional screens and computer-coordinated, earsplitting sound. Or they can gawk at some eye-popping down-to-earth marvels, too, including a tomato plant grown with the aid of a massive rotating-lens system that filters out harmful sun rays and focuses the beneficial rays where they're needed. The single plant is expected to bear no fewer than 10,000 tomatoes (p. 164).

Although Expo is meant to be fun, the subject of science and technology is also serious business and 48 foreign countries are participating. The U.S. exhibit, housed in an airy, tentlike structure, is the largest of the foreign pavilions and concentrates on developments in artificial intelligence, including a "mind machine," a prototype of a reasoning computer of the future. This is an area in which U.S. and Japanese

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THE ONE TO WATCH

Expo attraction, plant that may bear 10,000 tomatoes, grows under lenses that filter out sun's harmful rays.

high-tech firms are competing fiercely. Neither side is giving away any trade secrets at the fair, though.

But the underlying purpose of Expo is neither fun nor information exchange: it's to get Tsukuba Science City on the road, so to speak. The Japanese government and local investors have already spent nearly $3 billion on Expo, mainly on new and improved roads leading to and around the site—which is about the size of 90 baseball fields—and on other permanent infrastructure. The futuristic buildings themselves, which cost about $217 million to build, will be torn down as soon as the exposition closes on September 16. Then the government hopes that private companies will move here, making it an industrial mecca.

Despite its problems, its backers believe that Science City will live up to its promise. Some of Tsukuba's institutions are unmatched elsewhere in Japan and a few have no parallel anywhere in the world. The same is true of some of its achievements. For example, researchers working on supercomputers set a speed record of seven picoseconds (one picosecond equals one-millionth of a millionth-second) in an integrated-circuit logic element developed at Tsukuba's Electrotechnical Laboratory. Tsukuba also claims as a first a totally computerized, unmanned manufacturing plant developed by the government's Agency of Industrial Science and Technology and described as "the dream factory of the 21st century." The prototype plant, now operating on an experimental basis, employs computerized robots and lasers which currently are being used to turn rough metal castings into precision gearboxes.

"Our aim is to cut the manufacturing process to 50 percent of what it now is, and the manufacturing steps to 60 percent," the facility's recently retired Director-General, Minori Kanai, told a visitor. A key element in the factory's operations is the ability to fix the workpiece in place while the computer-controlled robots take turns shuttling back and forth to perform their tasks. A handful of humans in neat uniforms and yellow-plastic helmets record the performance on clipboards but otherwise appear almost superfluous in the two-story, immaculately maintained plant.

Science on a different scale is found at the National Research Center for Disaster Prevention—a cluster of facilities that strive to cope with Japan's never-ending plague of earthquakes, typhoons and floods. In the Rainfall Simulator, a cavernous corrugated-steel building that is powered to roll on railroad tracks, technicians can order up anything from a drizzle to a deluge. "About 200 people are killed every year in Japan by rain-related disasters," said Director-General Hiroshi Takahashi. "In Nagasaki in 1982 they had a record rainfall of 187 millimeters in a single day—the worst ever. Here we can produce 200 millimeters a day." The huge rainmaking building is rolled over artificial hills, grasslands and barren earth to test their reaction to rainfall and to predict when dangerous mud slides will begin.

The Earthquake Simulator, the first research station built at Tsukuba, uses a giant, hydraulically powered "shaking table" to recreate horizontal and vertical movements of the Earth's crust and their effect on models of buildings, bridges and other structures. Another device at the facility applies hydraulic stress to a full-size concrete building shell until it crumbles.

But peopling these fascinating institutions remains another matter. Ultimately, the success of Tsukuba will depend on people, not machines. Those who think positively envision private companies moving into the city, taking advantage of the spadework laid down by the Expo and the scientific community over the past 20 years. But for the near future, most visitors to the brain city may be struck by the echo of their own footsteps in the spacious modern buildings.

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Pointing, clenching and gesturing, hands molded of vinyl plastic make an eerie pile in Dorfman studio. Models are made by a venerable wax-museum concern which helps curators to enliven historical displays.

By Michael Olmert

Doubles are cast for leading roles in museum shows

A Baltimore firm has figured out a model solution to the problem of getting a lifelike human dimension in artifact exhibits

It's another weekday morning in Baltimore and, as usual, Robert Dorfman is hard at work in his cramped office on the fifth floor of a brick warehouse building. Trim and balding, the 37-year-old businessman is just under six feet tall. He is dressed in a gray suit, a white shirt and a striped tie. Seated next to him at his desk is a similarly arrayed gentleman whose physical resemblance to Dorfman is striking, right down to the wire-rimmed spectacles and the carefully tended beard. There are, however, a couple of fairly significant differences. Robert Dorfman is by far the heavier of the two and, unlike his vinyl-plastic counterpart, he is no dummy. He is president of Lynch Display Inc., also known as Dorfman Museum Figures, and his 35-pound "twin" is a vivid example of the kinds of products that his company makes.

Dorfman's firm, which consists basically of himself, one other full-time employee and several free-lance associates, is in the business of manufacturing lifelike human models. It started out about 30 years ago as a supplier to commercial "wax museums." Today Dorfman dummies are being used to dramatize scientific

Photographs by Robert C. Lautman

Eerie art of the dummy maker

Dorfman Museum Figures purchases realistic eyes made of glass or plastic from optical-supply firms.

Dane Penland

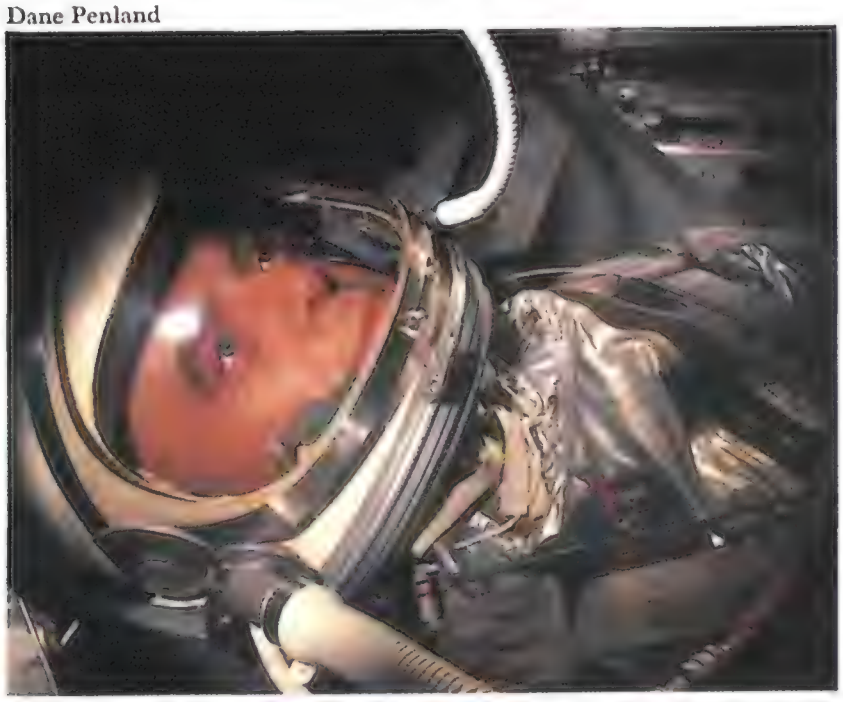

Figure of Alan Shepard in Mercury capsule at National Air and Space Museum features a head by Dorfman.

Sawing a leg is all in a day's work for Nathaniel Parker, veteran Dorfman employee who builds bodies.

and historical displays in traditional museums all over the country.

At the Smithsonian's National Air and Space Museum, the figure of astronaut Alan Shepard manning his Mercury capsule features a Dorfman head. At the Oklahoma Aviation Space Hall of Fame and Museum in Oklahoma City, the two heads of Thomas Stafford—in his Apollo 10 and Gemini 6-A space suits—are Dorfman products. In Memphis' Pink Palace Museum, a series of health-care dioramas features a number of Dorfman creations, including an early backwoods doctor "leeching" a woman in a log cabin, and a 1920s dentist at work on a patient. At the Mississippi Agriculture and Forestry Museum and the National Agricultural Aviation Museum in Jackson, about ten Dorfman figures portray the lives of working people.

The place where all of these characters were born,

Michael Olmert writes the Points of origin *column for* SMITHSONIAN. *His last feature article, on Steuben glass, appeared in October 1984.*

Fabricated of fiberglass, wood and Styrofoam, limbs and torsos must be "sculpted" into lifelike poses.

Robert Dorfman (right), president of museum-figures company, goes over some business with silent partner.

so to speak, is a 4,000-square-foot design studio located just down the hallway from Dorfman's office. The atmosphere is decidedly Halloweenish. Rack upon rack of heads, 680 of them in all, feature some of the most famous faces in American history nestled cheek by jowl with more contemporary celebrities. Many of the Founding Fathers are here, together with all 40 Presidents, Winston Churchill, Joseph Stalin, Pocahontas, Francis Scott Key, Davy Crockett, Lewis and Clark, John Brown and Dred Scott. Baseball star Hank Aaron is here, too, and so, of course, are John Wayne, Elvis Presley, the Beatles and Albert Einstein.

It is not a pretty sight, all of these heads, for they are in an unfinished state, lacking hair and eyes. Nearby is a mountain of torsos, a jumble of arms and a collection of hands in a variety of sizes, shapes, colors and attitudes—pointing, making a fist, pulling a trigger, hailing a cab, cupping an ear.

Most of the heads in this macabre collection date back to the company's wax-museum heyday, when Robert Dorfman's father, Earl, was still in charge.

Now 68 and semiretired, Earl Dorfman began his career as a department-store display director. In the 1950s, he teamed up with a government official in Washington, D.C., who wanted to open a wax museum there. At first, the plan was to buy conventional wax figures made in Europe. Then Earl and his associates came up with the idea of making models using vinyl plastic. Subsequently, he produced dozens of historical, religious and pop-culture exhibits for tourist museums in the nation's capital and elsewhere.

For laughs, a guard at one of the museums Dorfman *père* designed would sometimes station himself, stark still, near an exhibition. When spectators brushed by, the "figure" would slowly start to topple over until someone propped it back up, at which point it would start tipping the other way. Finally, the employee would straighten up, say "Thank you" and walk off, leaving the helpful tourist thoroughly nonplussed.

Artists have been turning out lifelike human replicas for a long time. The Romans made wax effigies of their ancestors. Even the usually restrained English carried wax figures of their rulers at state funerals, and wax museums were the rage in 18th-century London. But the superstar of the trade was the famous Marie Grosholtz, who was trained by the man she called "Uncle," Dr. Philippe Curtius. A famous German-born wax sculptor, Curtius opened a Paris exhibition in 1770 featuring wax models of great people of the day. During the French Revolution, Marie's skills were employed by the radical leaders to make death masks of the most famous severed heads, fresh from the guillotine. When Curtius died in 1794, she took over his waxworks and, shortly after, married a man named François Tussaud. Madame Tussaud moved to

Surrounded and outnumbered as usual, figure of John Wayne assumes a characteristically confident pose.

England in 1802 and eventually found a home for her waxworks in London's Baker Street.

Today, of course, the creation of realistic figures can be a fine art. George Segal has made a major career of designing plaster models of the human form. Duane Hanson and John DeAndrea both make superrealistic synthetic figures that are considered fine art, too. At prices ranging from $135,000 to $175,000, Hanson's models are eagerly snapped up by collectors. Dorfman models average from about $3,500 for stock figures to $5,000 for figures with newly created heads.

A Dorfman figure is manufactured in several stages. First, a sculptor models the head in clay. A mold is made of the clay, and liquid vinyl plastic of the consistency of honey is poured into it. After the head is pulled from the mold, it is painted and the hairs are inserted. The eyes are purchased from an optical-supply company. "You can't just stick them into the head," Dorfman says. "They have to be focused on a particular spot in the display."

Another hard part to get right is the arrangement of the torso, arms and legs. Dorfman makes the torsos out of fiberglass and Styrofoam. The fully articulating arms are made of wood. "The art," Dorfman says, "is in getting the whole body into a real-life pose."

Vinyl-plastic hands can fool even those who are familiar with them. A few years ago, when the firm was preparing a large shipment of figures, one employee picked up a box full of hands and carried it down a dark corridor of the warehouse. He came upon Earl Dorfman's wife, Norma, who was working there that day, and asked her to see if a certain hand was in the box. Earlier, he had cut a hole in the side and inserted his own hand through it. When Mrs. Dorfman reached in, one of the plastic hands came alive and grabbed her wrist. She still does not like to be reminded of that moment.

One advantage of vinyl plastic is the fact that it accepts hair readily. Robert Dorfman knows a lot about applying hair but he doesn't have much of it left on his own head—and that presented something of a problem a while back. He had a model of himself made five years ago to use as an attention-getting device at conventions and on sales calls. Then he began to find it necessary to pull hairs out of the dummy's head because his own hairline was rapidly receding. Eventually there were so many hair changes that the company had to make a second head. With dummies, luckily, you can do that. "Better him than me," Dorfman shrugs.

The King of Rock and Roll is dead, but Elvis Presley's vivid likeness haunts Dorfman studio in Baltimore.

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JAGUAR

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On the sunny porch of an Appalachian cabin, Cecil Sharp (left) scribbles notes to ballad offered by a mother and son, as assistant Maud Karpeles jots down lyrics.

By Tony Scherman

A man who mined musical gold in the Southern hills

In 1916 Cecil Sharp crossed the Atlantic to catch up with ballads from Britain

A young mother of two, Berzilla Wallin sat wide-eyed, watching the Englishman. Her father-in-law would not let him on the property. This Sharp—everybody said it—was a surveyor come to snatch folks' land for a reservoir.

But 68 years later the Wallin family still owns its unflooded homestead: 148 acres in the mountains of Madison County, western North Carolina. And Berzilla's son Doug farms the land for tobacco, though at 65 he's semiretired. A steep trail slices through thick forest. Paralleling a pretty stream, it winds right up to the cabin.

Up that trail in August 1916 came Cecil Sharp—Cambridge '82, vegetarian, Fabian socialist—and his assistant, Maud Karpeles. "Right over there," says Berzilla, 91 now. "Horseback. Almost through the yard, then on up the old path that ran to the low gap, hardly more'n a sheep track. I could study 'em. Back and forth: go by, come back. Till they finished what they needed." Many of her neighbors shed their skittishness and helped Sharp out. "Oh, they was still awatchin' him. But everything turned out just fine."

He made out like a bandit.

Cecil Sharp was after a possession less tangible than land. A renowned folklorist from England, he was hunt-

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Balladeers Berzilla Wallin (left) and her aunt Zipporah Wallin both met Sharp in North Carolina. Berzilla is still alive at 91. Aunt Zipporah died in 1982, age 103.

ing for songs, British ballads, in fact. Songs of great vintage, their birth shrouded in late-medieval mists. The "Riddle Song" ("I gave my love a cherry") from the 15th century. The lovely "Barbary Allen" ("Twas in the merry month of May/When flowers were all a-budding. . . ."), duly noted by Samuel Pepys in his entry for January 2, 1667. "Lord Bateman," which may stem from the exploits of Gilbert Becket—father of the martyred Thomas. Antic, bawdy or mournful, they were the handmade, homemade common poetry of the British people. Passed along by melodied word of mouth, sometimes hawked on printed broadsides, they were brought to the deep mountain valleys by 18th-century Colonial settlers, took root and flourished, hidden to the world. And then, in eager if belated pursuit, came Sharp, an improbable voyager.

For three years the mountains gripped him. When he broke free, a tired, homesick old man, he had the makings of *English Folk Songs from the Southern Appalachians*. Sharp's work introduced the world to the mountains' treasure of music. An ironist's delight: in an era when many Americans still regarded Southern mountaineers as near-savages, along came a sophisticated Briton, begging to differ. With grand, two-volume authority, Cecil Sharp flung wide the mountain gate to generations of Appalachian folklorists. Yet their marvelously ill-equipped master remains unbested; ballad authority Bertrand Bronson put it just right: Sharp's work is "the best regional collection we shall ever get."

"Course," says Doug Wallin slyly. "Sharp missed a lot. Missed my favorright ballad, 'A Bed of Primroses.' I'd-a been here, he'd-a had it." A fine balladeer in the old unaccompanied style, he clears his throat and sings—a sad air about a beautiful maid:

"One evening so late as I rambled,
On the banks of a clear purling
stream,
I posed back on a bed of primroses,
And gently fell into a dream. . . ."

And on it goes till the maid ravishingly tells the men of Ireland to be kind to women—and troubles on Earth will be over.

In 1899, Cecil Sharp was 40, a chronically ill music master and failing composer. On Boxing Day (the

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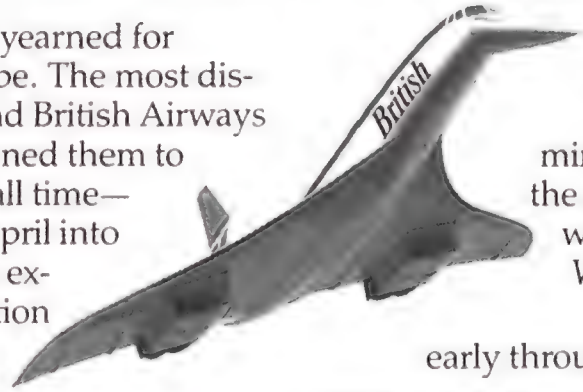

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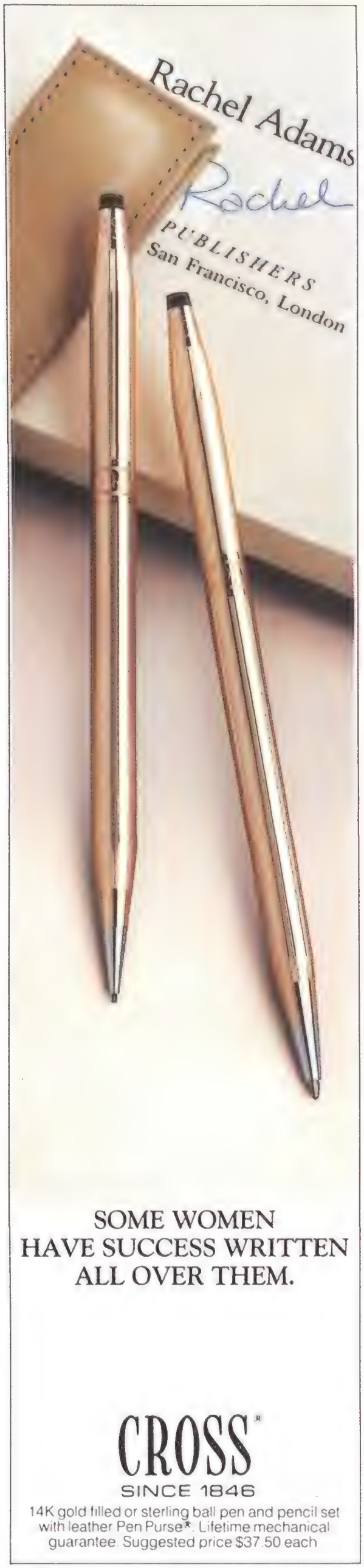

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day after Christmas), laid low with gout at his mother-in-law's house near Oxford, he spied a group of Morris dancers. To his jaded post-Wagnerian ears, the folk dance and its simple concertina music were pure magic: "It knocked me between wind and water," he said.

What it did was turn him from middle-aged flop—almost literally—into a folk hero. His musical epiphany coincided with a renaissance in English folk music. The old ballads and dances, long ignored and fading from memory, had suddenly become a cherished national resource. And when he got to it, nobody cherished them more than Cecil Sharp. "He has rescued a folk-song literature of a whole nation," a reporter gushed in 1915. Sharp even lobbied to get folk songs taught in England's schools, founded the English Folk Dance Society and lectured tirelessly.

Above all, he took to his bicycle.

Choosing a base—usually a friend's house—Sharp pedaled the countryside in search of song, a striking vision of bony, clerical angularity and passionate English eccentricity. Hailing cowherds, wading into county fairs, knocking on cottage doors, he was a legend among English countryfolk. By his death in 1924 they had given him nearly 3,300 tunes.

Truth to tell, few of these were downright discoveries; most were versions of songs already collected. But earlier collections mostly lacked something alarmingly basic: melodies. Folklore was still a literary affair, a matter of verse not voice. Ballad scholars tended to pore over yellowed texts, minutely annotating —without ever humming a note. But Sharp and his disciples wanted England to *sing*—and out they trooped singing and playing their finds as they found them, to gather English folk songs from English folk. Without their work, we might stare today at nine textual variants of an old song—and not know how in the world it actually sounded.

When he hopped off his bike, Sharp was full of charm. He came armed with scores of tactics to coax songs and lyrics from the taciturn and elderly. Faced with a tight-lipped peasant, he might launch into song himself, cagily using the wrong words, until the listener could not resist correcting him.

Or the tool might be relentless patience—Sharp was once described as having a "pachydermatous spirit and insidious bedside manner." A friend watched him stalk a balladeer known to sing "only when he had had the exact amount of stimulant necessary for intelligent expression. 'He's a cup too low' meant waiting; and 'a cup too high' meant packing up for that occasion. . . . Tense with all the grave anxiety of a maternity doctor attending a difficult birth," Sharp could wait until the decisive moment.

Sharp's English singers—a marvelous array of gypsies, washerwomen, gardeners and assorted pensioners—often needed no prompting. And he was a great song collector for a simple reason: he liked the company of country people. John Short was town crier in Watchet, on the Bristol Channel. A 50-year sea veteran, he liked to be near the waves to sing. Sharp visited often and the two would walk down to the harbor. John Short sang lustily into the ocean's din. Sharp sat smoking his pipe, humming and jotting down words and notes.

But "the English ballad is moribund," Sharp brooded to himself in 1907. "Its account is well-nigh closed." As each old singer died off, he worked harder to preserve the heritage. By 1914 England, galvanized for its first industrial war, had little use for a wandering folk-song popularizer—with a family to feed.

Coming stateside, Sharp first embarked on a fairly lucrative career as

Author Tony Scherman plays guitar and often writes about the sound and the sources of American music.

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THE DUSE ENCHANTMENT

(or, how her heart caught fire over a Sambuca Romana.)

When they met, she was at the height of her powers, an actress adored, even worshiped, by all Italy. He, rising poet, novelist, journalist, was the pampered son of a wealthy landowner. Together, Eleonora Duse and Gabriele D'Annunzio were a memorable conflagration.

Both, it is said, were habitués of a certain Roman cafe. There D'Annunzio was introduced to the potent seduction of Sambuca Romana, Rome's remarkable liqueur distilled from berries of the wild elderbush. Its suavity and elegance appealed to his poet's sense of form; his ardent nature responded to the fire at its center.

It was on a warm evening in June that Duse and her coterie arrived at the cafe just as D'Annunzio's liqueur had been served. One of his friends insisted that he meet the great actress, taking him to her table. The full force of her beauty was overwhelming. Impetuously, he drew up a chair and fell deep into conversation.

As they talked, he toyed with his glass, dropping roasted coffee beans into it one by one until three floated there. Pausing to light a cigarette, he held the match for a moment close to the liqueur. A blue flame danced over its surface, matching the flame born at that instant in the hearts of poet and actress.

Thus began a relationship that for six years inspired them both: him to write plays for her to perform; her to performances of incandescent radiance.

As for Sambuca Romana Con Mosca, the drink the poet created, the taste is history.

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a kind of cultural missionary to a culture-starved American middle class. "If I had the pluck," he noted, "I could coin money out here. . . . Get up a really swagger studio and charge enormous fees. But I feel I can't do it." He needn't have agonized over professional options: a meeting with a remarkable lady would jolt him back to his true vocation.

After the Civil War, missionaries and teachers had begun tentative forays into the southern Appalachians, the great, craggy home of "our contemporary ancestors" (as an *Atlantic Monthly* article called the upland folk in 1899). By 1900, accompanied now by industry, do-gooders penetrated gap, hollow and creek. Most saw the mountaineers as depraved victims of isolation; deaf to ballads, these invaders hastily taught hymns. A few were more curious. Olive Campbell, for instance, of Asheville, North Carolina.

Sharp's first source in Britain, in 1903, was a gardener named John England.

Olive's husband, John, had been hired by the Russell Sage Foundation to research social conditions, especially the upgrading of Appalachian schools. John took long mountain trips; Olive went with him. She was stirred by mountain music—ballads like "The Swapping Song," "Barbary Allen," "Brown Girl." "The real old plaintive folk tunes," she wrote in her journal, "absolutely minor and fascinating." In fact, they only sounded "minor." Sung in premodern, keening scales of five or six notes, many were simply earlier versions of the songs Sharp had been chasing in England. And in 1908 Olive Campbell started writing them down.

Other song gatherers were attacking the hills, but she thought the work "scattered and unscientific," hampered by "sectional jealousies." What was needed was a single, thorough study. So she was intrigued to learn that a Mr. Sharp, "*the* authority on English ballads," was lecturing up North. Packing her manuscripts, she caught the train to Boston.

Sharp was laid up with lumbago in Lincoln, Massachusetts, when Olive Campbell first appeared. Appalachia? Wasn't this a rather, er, *bracing* locale? But as he began to leaf through Campbell's sheaf of songs, Sharp quickly saw that he had to go there. Amateurs forever deluged him with spurious material. This was the real thing. Thrilled, he recognized each song—yet through a veil of odd, stark melodies and strange lyric changes. Like "Jimmy Randal" instead of "Lord Randal," for instance, with the dying hero bequeathing to his father "my mules and my wagons" instead of his lands and houses. English ballads, alive outside England! They *must* be tracked, heard, collected. "I am told," said Campbell, "that he improved from that day on."

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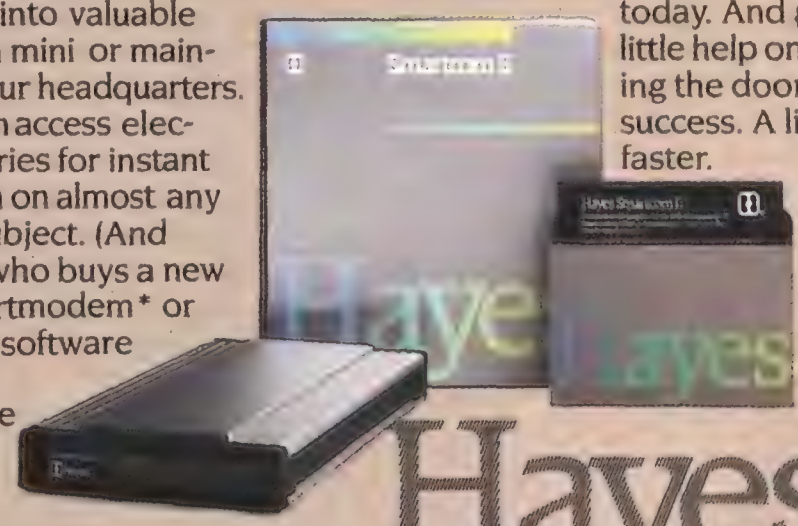

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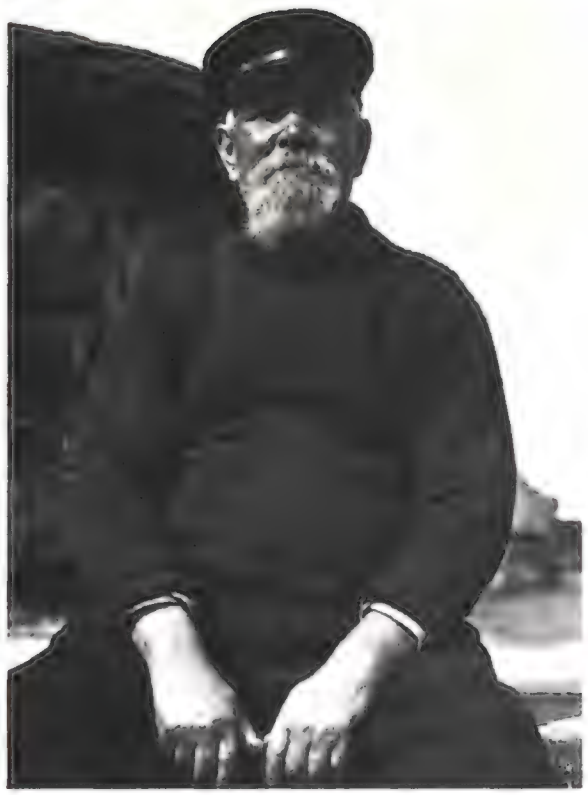

Sharp collected sampling of sea chanteys from John Short, a Somerset mariner.

She briefed him. Anyone from outside the mountains was a "furriner" and suspiciously regarded. "The mountain people are sensitive, proud and shy but will do things for you if they like you."

And so Sharp and Maud Karpeles eagerly set out from Asheville, forewarned if not forearmed. (Friends advocated a gun; Sharp declined—handling one would cause him greater anxiety than "the wildest savage.") It was late July 1916. Still, he wrote, "I have never been so frightened in my life!" A vertiginous 40-mile car-and-buggy trip to White Rock, North Carolina, took 11 hours—and two limp Britons were dropped among the cliffs of Madison County.

Sharp recovered at once. He was enchanted by the mountaineers' archaisms of speech and manner (to this day for Berzilla Wallin, England is "across the waters"). At first he referred to them as "just English peasant folk." He even said, "It is most refreshing to be once again amongst one's own people." The suspicious residents were not as eager to claim kinship. Who were this odd pair? Land surveyors? Moonshine agents?

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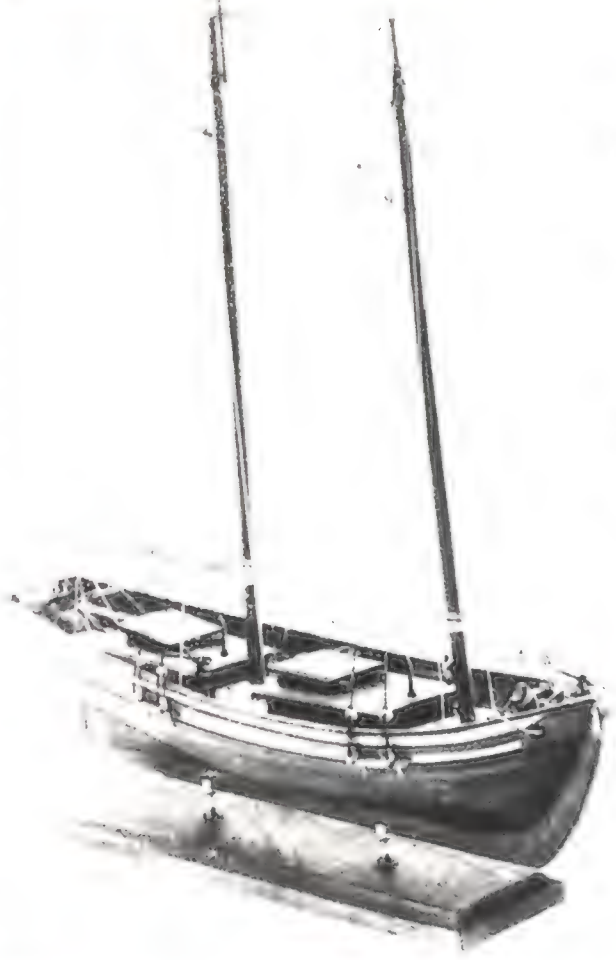
Sharp was first lured into his Southern journey by an amateur folklorist, Olive Campbell, shown with her husband, John, in Asheville, North Carolina.

One community pegged Sharp and Karpeles for German spies. All that fancy talk about ballads had to be just a blind for their real plan: poisoning the springs.

But faced with Sharp one couldn't harbor suspicions for long. He'd settle into a porch chair with such pleasure to chat about the pyramids or the Panama Canal. "So educating," said one woman. A schoolmistress sketched the man at full tilt:

"I remember the first morning when Mr. Sharp came to six o'clock breakfast late, having lost his way to the dining room in the thick mountain mist that filled the valley—suffering terribly from an attack of asthma, which to my inexperienced eyes seemed highly alarming—and then



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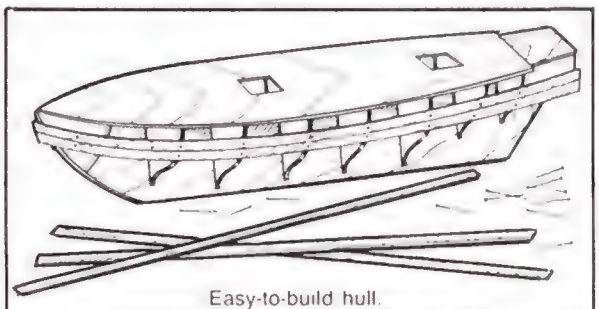

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going off down the valley within the next hour, walking miles to get songs from Singing Willie Nolan."

How did Sharp work? He'd flirted with the idea of a phonograph, but the machines of the time were clumsy to lug about in the mountains. Besides, even in England Sharp rarely used them, claiming they inhibited his singers. He was phenomenally accurate with mere pen and paper, "almost the ideal recorder," says Bertrand Bronson. At his career's start Sharp noted words and tune himself. In 1913 neuralgia slowed him; an assistant—usually Karpeles—began taking the words in shorthand. Melodies remained Sharp's domain, with singers repeating a tune until the collector was satisfied he had it.

To many a mountain singer, most of whom couldn't read music, Sharp's notating was a feat of magic—especially when, sight-reading, he'd actually sing their tunes back to them.

Olive Campbell had been right: British ballads abounded and Sharp bagged them with glee. Some, thriving in the Southern hills, were dead or dying in Britain. "The Wife of Usher's Well," first gathered in 1802 by Sir Walter Scott, was a poor, half-remembered tatter in Scotland. In 1916 in America, mountain singers gave Sharp 18 fine versions of the terrifying ghost ballad in which a woman's three babes haunt her:

"Dear mother, it is the fruits of your
own pride heart
That has caused us to lie in the clay.
Cold clods at our heads, green grass
at our feet.
We are wrapped in our winding
sheets. . . ."

Though the old transplants were Sharp's object, he couldn't resist some home-bred American beauties: "Springfield Mountain" and "John Hardy"; "Poor Omie" ("Little Omie, Little Omie says: 'I'll tell you my mind;/ My mind is to drown you and leave you behind' "); "Cripple Creek." "Sinner Man," an English immigrant, Sharp especially loved, asking one woman to sing it until she called him "Sinnerman."

Nine weeks in 1916 netted Sharp 387 tunes. They were the most productive he'd ever had. The mountain "nest of singing birds" was "the greatest discovery" since the Boxing Day revelation 16 years before. This was a happy man, swapping musical confidences and transatlantic tales. For the first time ever, Sharp felt truly relaxed singing for an audience, unembarrassed by his voice ("or lack of it," wrote Karpeles)—evidence of

Rich in corn and ballads, the hamlet of Sodom Laurel, North Carolina, drew Sharp mightily during his search. Today it is still the home of the Sodom Laurel Ballad Singers.

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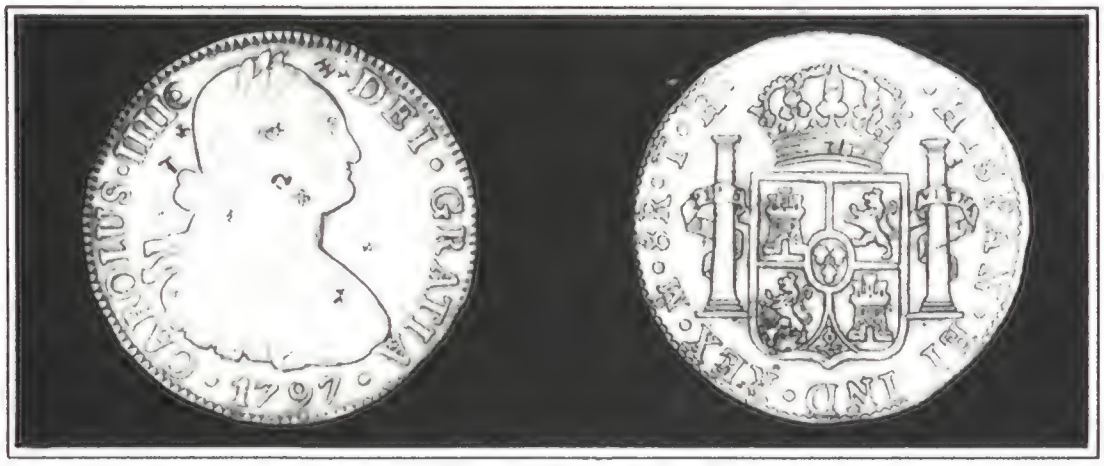

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Minted from 1772-1821, these silver dollars were the most popular coins of our 13 colonies and were used as legal tender in the USA up until 1857. As collectors and investors turn to American coin classics, these scarce silver dollars are becoming increasingly sought-after and desirable.

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Sharp's powerful inhibitions and of his new friends' stronger hospitality.

The Appalachian songs packed a punch, had a "primordial intensity" that the mellow, sweeter British versions often lacked. Mountain tunes were also freer, more spacious: rising and jaggedly falling in their spare five- or six-note modes. These people improvised. They "worried"—slurred—notes. Repeating a song, they might see fit to change the melody, often with a skill Sharp found "amazing." English singers, despite a more modern seven-note scale, seemed timid, hidebound. There were differences in manner, too—unlike English singers who were sometimes stiff and self-conscious, most hillfolk tended to be loose and easy.

Sharp saw he'd been rash—by no means were these intriguing strangers "just English peasants." Hastily, he recanted his English folklorist judgment. Mountaineers, unbowed, lacked the "servility which unhappily

Aide Maud Karpeles, here in spirited Morris dance, later wrote book on Sharp.

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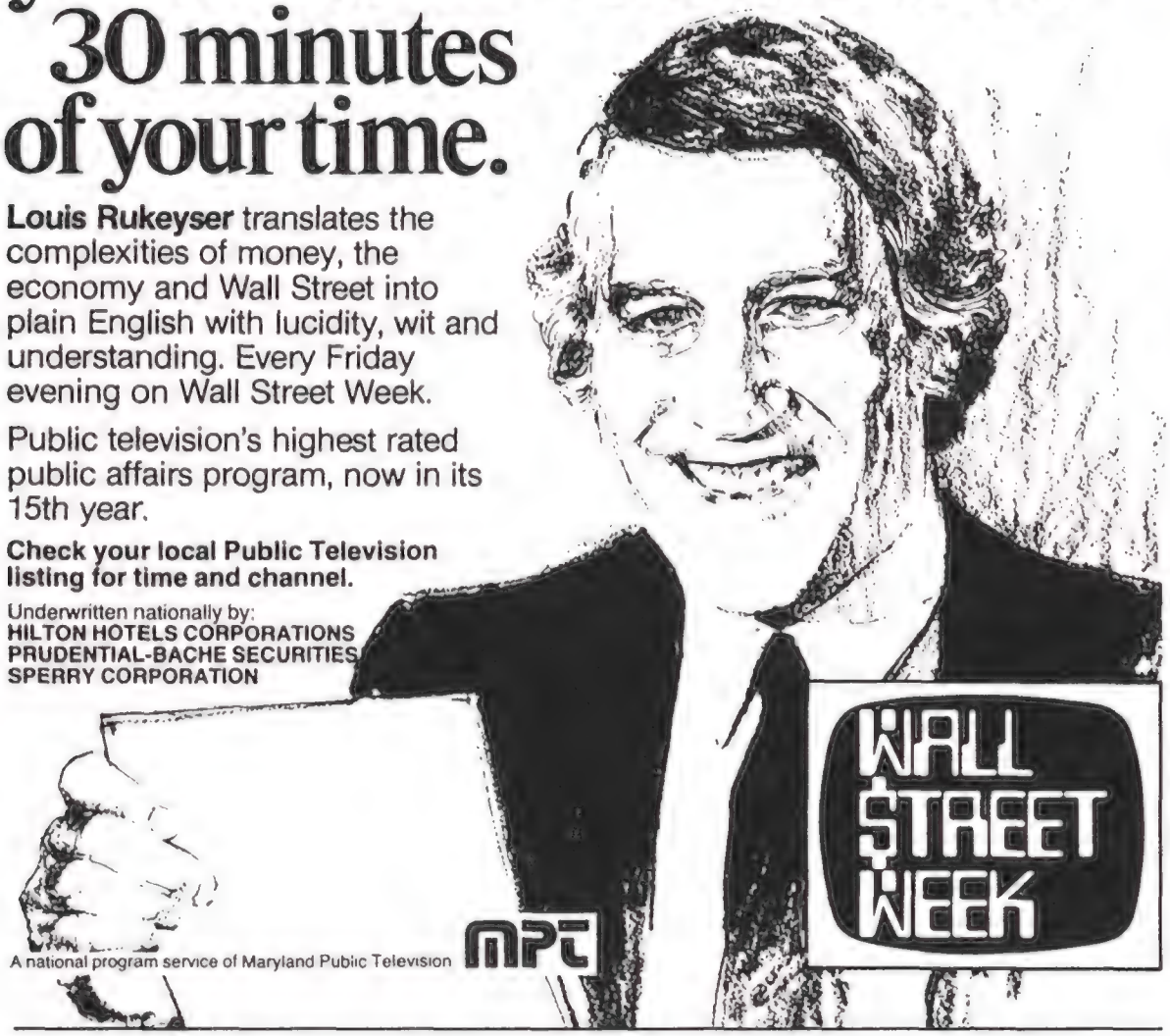

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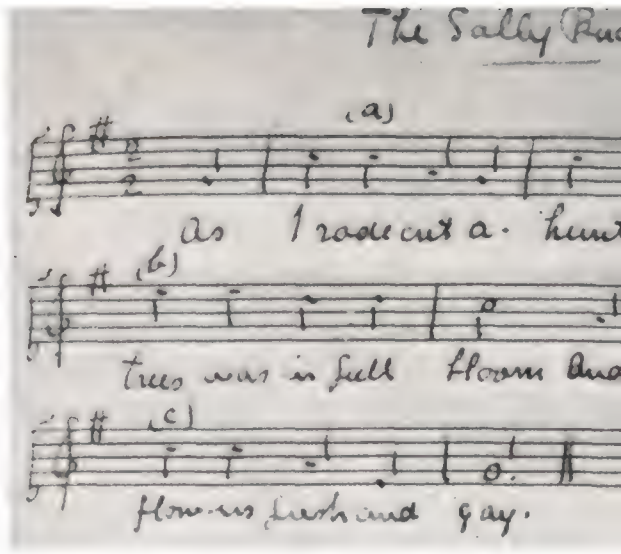


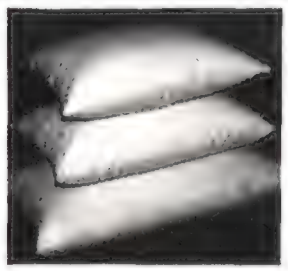
First bars of "Sally Buck," collected May 9, 1918, and noted in Sharp's hand.

is one of the characteristics of the English peasant." But the parallel refused to die a simple death: "With that praise I should say that they are just exactly what the English peasant was one hundred or more years ago."

In the spring of 1917 he and faithful Maud were back. For 37 hard weeks in 1917 and 1918 they criss-crossed the mountains. Did Sharp, ill in Kentucky or broiling in the sun, ever groan, remembering his 1915 letter to Olive Campbell that jauntily spoke of "a month or two" in her "district"? The mountains were spectacular, though, "a paradise! If I had not my own special axe to grind I should be collecting ferns or butterflies or something."

Travel was dangerous, difficult and nerve-racking. Roads were always precipitous one way or the other; also *rare*, usually just a path or dry creekbed. He got about on mule or horseback, in "jolt-wagons" or on foot. Footlogs—the tree trunks spanning creeks—were Sharp's particular terror, even though he used his umbrella and walking stick for balance. The vision of a gangly gentleman in cream-color suit inching across a footlog, umbrella in one hand and alpenstock in the other, must have transfixed mountaineers.

Food brought further perils. Fat-fried hog meat distressed a lifelong



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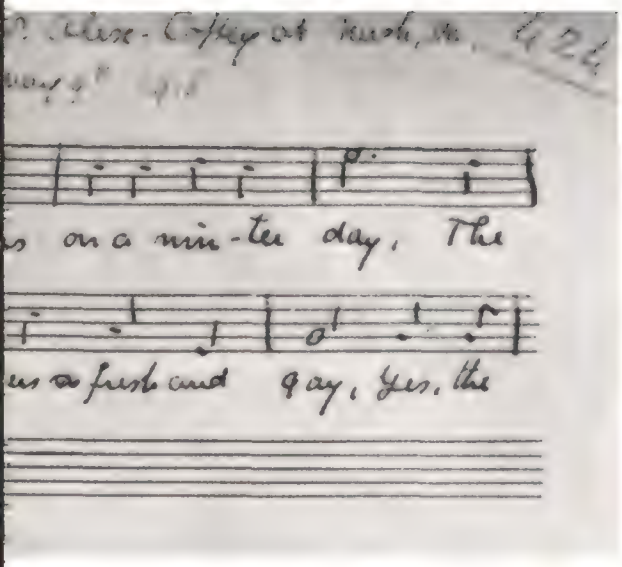

This was near the end of his tour when he had collected more than 1,000 songs.

vegetarian; buzzing swarms of flies dulled the English appetite. Sharp and Karpeles' emergency stock—chocolate and raisins—soon palled. Sharp announced later, "I feel I can never again look a raisin in the eye."

Heat, dirt, exhaustion, overwork—breakdown. After charming a conference in the spring of 1917, Sharp fell gravely ill. At one point he was sick for an entire month in Kentucky. "I have had rather a smasher," allowed Sharp during a respite. Relapsing badly, he grew so ill that a frantic Karpeles telegraphed Olive Campbell's husband, who swiftly made the trek to Kentucky. Karpeles suspected Sharp's recurrent influenza ("grippe, I believe you call it"). Campbell decided it was either typhoid or malaria or tuberculosis. A dentist, calling when Sharp was already on the mend, attributed the whole disorder to a gum infection.

Up again, Sharp was taxing himself as mightily as before. The best mountain ballads came from the most backward areas: "Dirt and good music are the usual bedfellows," he pronounced. Decent hotels made him feel guilty. "Too comfortable to be getting anything really good," he noted in a letter.

He was quick to dirty his elbows in mountaineers' lives. Horrified by the unwholesome food at a Kentucky

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Impromptu chorus consisted of 13 children and stepchildren of Laurel Wheeler, who chimed in with Laurel when Sharp visited Buena Vista, Virginia.

school, he pleaded with the Russell Sage Foundation to do something. "I can hardly sleep for thinking of the children," he wrote. School directors should not be "allowed to drag down the mountaineers to their low and crude level."

He was particularly taken with Emma Hensley, a 13-year-old pre-Raphaelite beauty who lived in Carmen, North Carolina. Emma was eager for schooling; her mother agreed, hoping the refined atmosphere would break Emma's tobacco-chewing habit. Sharp grilled the headmistress of the nearby Hot Springs, North Carolina, mission school and then helped with tuition and paid for Emma's outfits ("Now I am *really* going to impose on you,"

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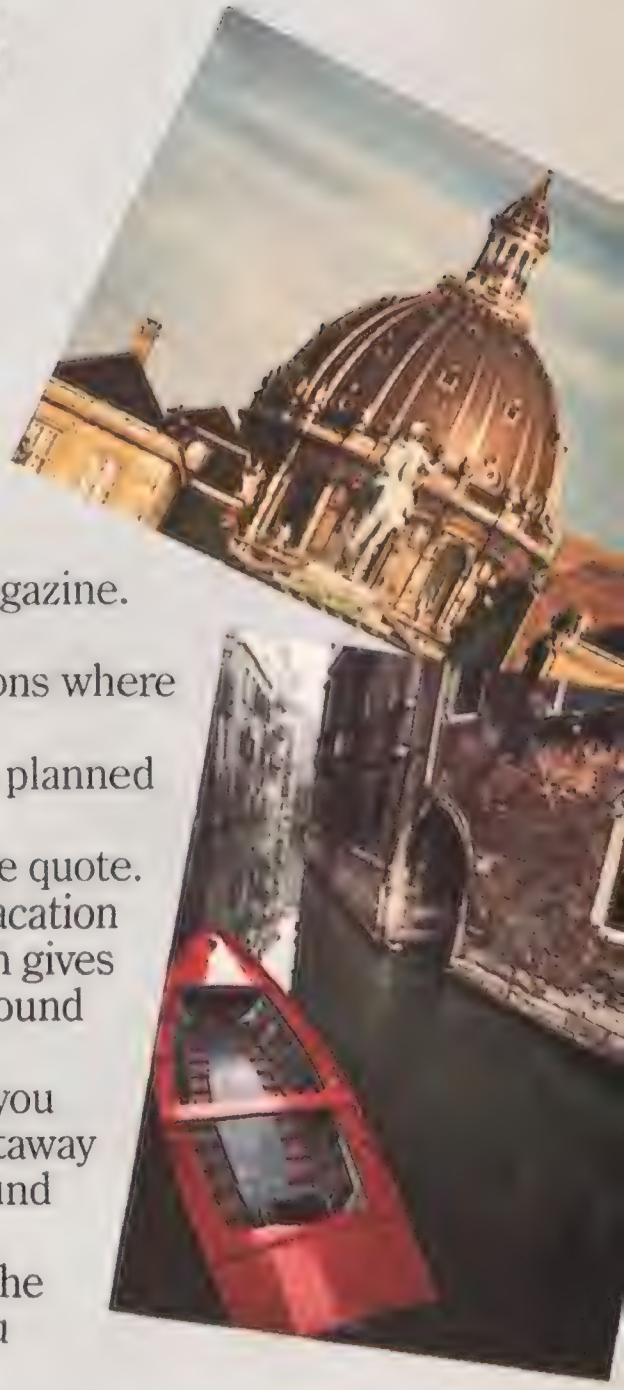

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Miller Coffey, of White Rock, Virginia, sang "Arise, arise ye slumbering sleepers."

begins Karpeles' note to John Campbell's secretary, clothes-shopping list attached). Shortly after Emma left home for Hot Springs, Sharp and Karpeles pulled into town. There was Emma, trudging homeward with a schoolmate: "We have just run away." She was adamant. They watched her start the 20-mile trek across the mountain. "A scion of such a natural singing family," Sharp mused, "could not be expected to fit any Presbyterian mold. Better that she kept her liberty."

Popping up for vivid cameos were mountain folk like Frizzly Bill. Karpeles: "A hoary-headed gentleman known as 'Frizzly Bill' informed us that he had '*owned* three wives.'" Sharp: "I came across Frizzly Bill yesterday at Alleghany and have an appointment with him on Tuesday morning. Alas, he sang me one song *very* badly and I am afraid he *may* be a thoroughly bad singer." Sharp, three days later: "In despair, Frizzly Bill has failed to turn up, alas!" (Sharp's day was saved by his meeting with a Mrs. Rice; "took eight off her," he noted.) Frizzly could run,

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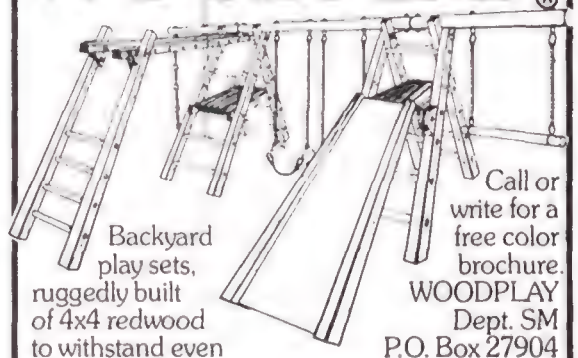

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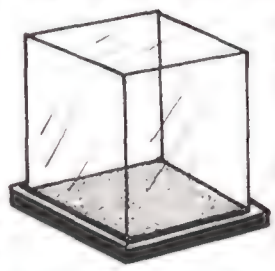

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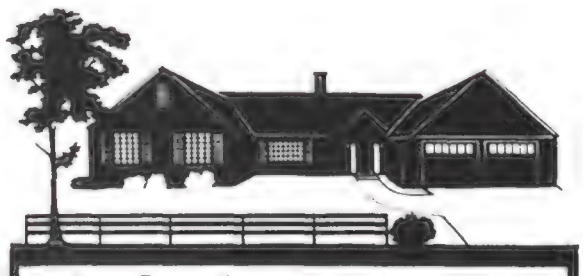

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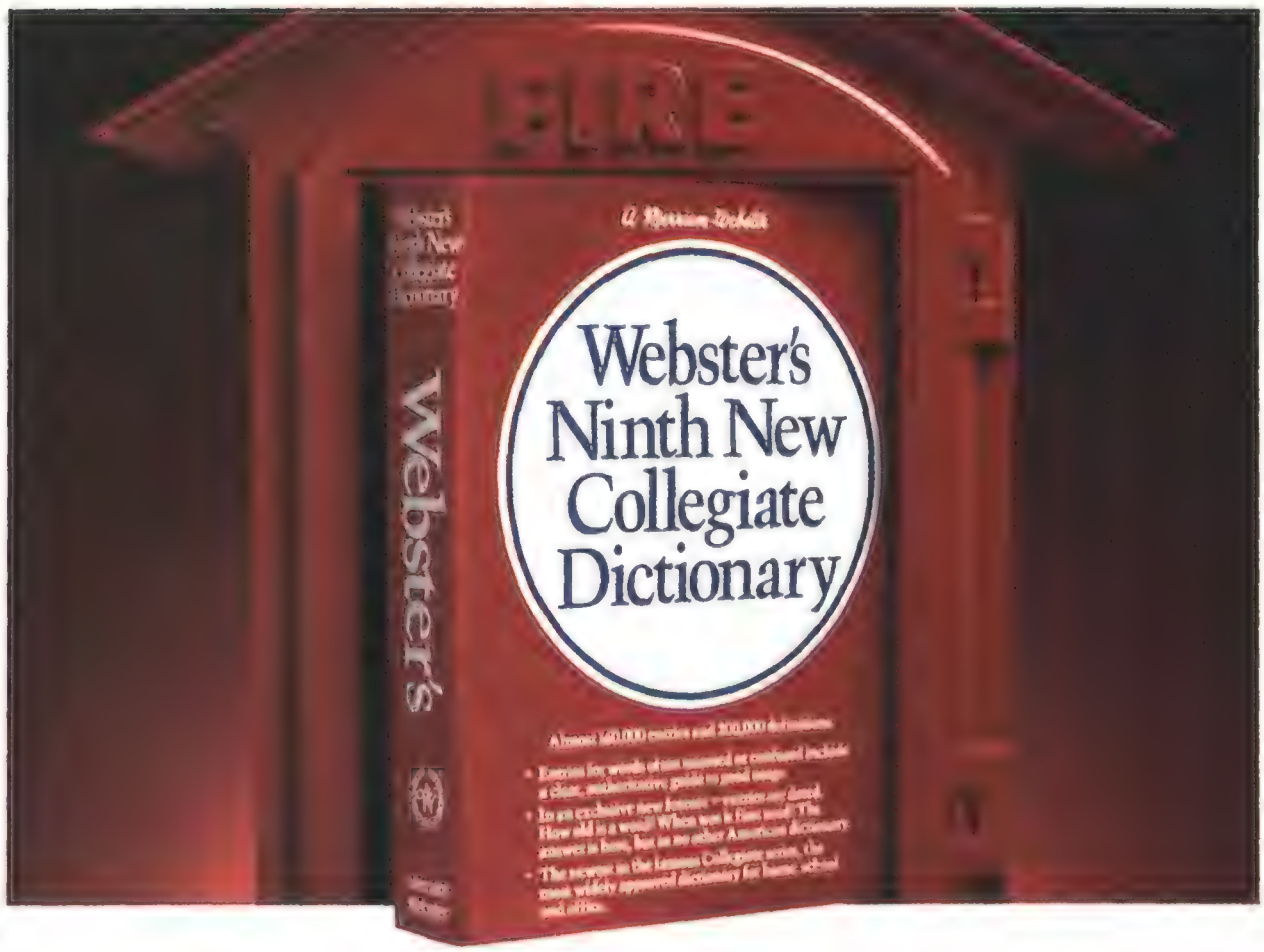
but he couldn't hide. Karpeles: "Frizzly Bill has been captured by Mr. Campbell and he has been brought here. . . ." The interview's results are not known.

Certain pockets of the mountains were especially song-rich: western North Carolina and tracts of southwestern Virginia and eastern Kentucky. Song was almost as common as speech, deeply stitched into work and daily life. But, as sometimes happened, one songstress' memory failed her. "There now," she cried, "if only I were driving the cows home I should remember it at once."

But the farther beyond these pockets Sharp ranged, the less he found. He began to sound more and more like an angry conservationist. Southern Appalachia, he complained, was opening up to oil, coal, lumber, salesmen, tourists; the "nest of singing-birds" crawled with a "hurly-burly of dollar-hunters, dirty, unkempt, unsanitary, slipshod." In Manchester, Kentucky, "traveling businessmen of a very low order" revolted Sharp. "Except for the fact that they don't

Mrs. Mollie Broughton entertained Sharp in her old Kentucky (mountain) home.



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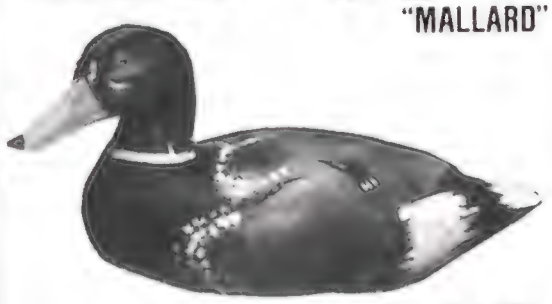

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In Madison County, North Carolina, workers carrying tobacco plants out of the field, as they do here, often sing the old ballads together.

grunt when they eat," he wrote, "they might be hogs." Escaping to a Virginia resort, he found no peace, only "an idle upper shop class of fleshy matrons be-powdered and be-carmined who sit and gossip all day."

The people of Clay County, Kentucky, aping city folk, were "quite above the singing of those dusty old love songs." And Virginia, he wrote somewhat prematurely in 1918, "where they are all making money hand over fist, would have been a fine hunting ground 50 years ago, but its day is past."

Homesickness and melancholy were setting in. "The restless life I am leading begins to tell," he said. "I want to get home again." He had already published a small Appalachian collection in 1917. As excited collectors began to plan mountain trips of their own, the weary musical pioneer came down from the hills for the last time. Resting in Asheville in late fall 1918, he wrote that there was still collecting to be done in the mountains. Others were welcome to it: "I go nearly wild when I think of a quiet room with my piano and books around me."

Things have changed since Cecil Sharp's day—but perhaps not entirely. "She won't die out," says Doug Wallin. He stands now on the porch of a cabin in Madison County. "We'll hold to her. Ballads, the old music. That's our heritage."

Whose heritage?

"Ours right here. Mine." He nervously adjusts his cap, which says "Modulate With Me." "I'm going to sing you my second favorite ballad, one called 'The House Carpenter.' "

Cap at a jaunty angle, eyes straight ahead, Doug slams into the harsh song of adultery and death that barrels grimly to its heroine's final despairing cry:

"Don't you see that black cloud
    arising,
As black as any crow?
There is a place called hell, you know,
Where you and I must go."

Doug's great-aunt Mary Sands sang it for Sharp, who'd known it in England as "The Daemon Lover." Yet it begins to sink in: Doug's song is no English ballad. It's Southern music. And mountain music. Edgy, frightened and frightening, like a curse,

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S

like a poor damned soul crying in the hills at night.

Cecil Sharp's careful notation could never have caught its slides, slurs and twangy gutturals. One wonders if the collector, scribbling, realized this, and if it depressed him. Most likely it delighted him. For he was finding songs of ancient pedigree, but *different*: they'd taken on their own life. And so, what Sharp had originally seen as an interesting appendix to his career turned into a whole new chapter. More, for *English Folk Songs from the Southern Appalachians* is one of the great American books, an inexhaustible mine from that time to this. It was compiled with patience and suffering by a kindly Englishman who came here just trying to turn a shekel and somehow wound up in the hills.

Doug Wallin, 65, plays and sings "The House Carpenter." His great-uncle, Mitchell Wallin, played for Cecil Sharp close to 70 years ago.

Book reviews

'Possum Huts
Helga Tacreiter
Photographs by Walter Hankinson
Amaya Publishing Company, $6.95

What does a maid do when she isn't a-milking? She builds 'possum huts. That is, she does if she is the talented and persistent Helga Tacreiter. When not utterly exhausted, Tacreiter spends her spare moments handcrafting miniature houses —doll houses, you might be tempted to call them—with meticulous interior decor. Now, in this delightful book, she invites us inside her panoply of 'possum huts.

A 'possum hut, for those of us who don't share Tacreiter's intimacy with rural New Jersey and its argot, is in her words "a small crudely built and furnished cabin." There is something appealingly roughhewn, but nothing crude, about Tacreiter's two-foot-high homesteads, as lovingly documented in color photographs by her longtime companion, Walter Hankinson.

Within their latched doors and louvered windows these quaint clapboard cottages are cosily appointed. Behind velvet drapes a platform bed beckons, fitted with a patchwork bedspread and lace-edged embroidered sheets and pillowcases. Light streams through a stained-glass window depicting J. F. Millet's peasant scene *The Angelus*. Hanging ceramic pots of fern and ivy shade a windowed reading corner. Bread lies on a cutting board in a sunny breakfast nook.

From every aspect the houses and all their holdings appear high, wide and handsome here. The cover shot of a steeply pitched roof outlined against a fiery sunset is redolent of the Little House

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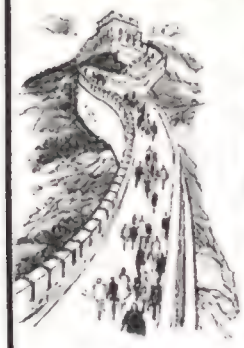

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"Taxie, friend and neighbor," grazes undisturbed by author's tiny 'possum hut.

on the Prairie. Just how little these constructions are, however, cannot be discerned from Hankinson's artful choice of camera angles. Only when the photographs show a full-size hand reaching for a thumbnail-size pot or a cow grazing near a fetlock-high cottage is Tacreiter's world put into proper perspective.

Verisimilitude was much on the author's mind, for she dwelt five years in a 'possum hut, a 10-foot-by-12-foot cottage in Amaya Gulch, in California's Santa Cruz Mountains. That shed, built of salvaged glass and packing crates, is pictured in a photograph indistinguishable from those of its pint-size progeny.

Tacreiter built her first model hut at age 21 in 1973 as a travel advertisement of sorts. "I was infatuated with my home and wanted to invite my sister to come and see it," she recalls. Tacreiter scavenged for wood and pared down her own possessions to make her first miniature. Spoons were shortened, brooms plucked to fashion the first tiny furnishings.

Despite the appealing result, the sister never came and eventually Tacreiter moved on to New Jersey. But she kept on building model 'possum huts. "The feeling of home emerged so strongly from this first model" she writes in meticulous longhand in the book's introduction, "that

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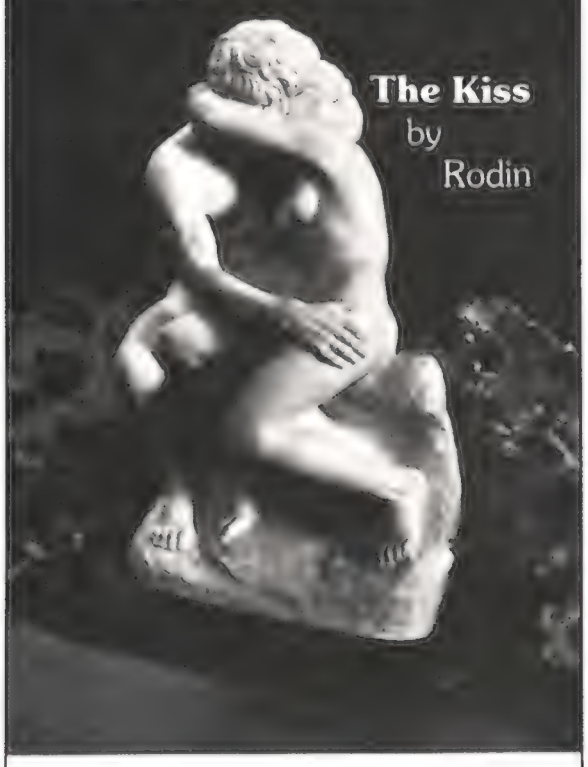

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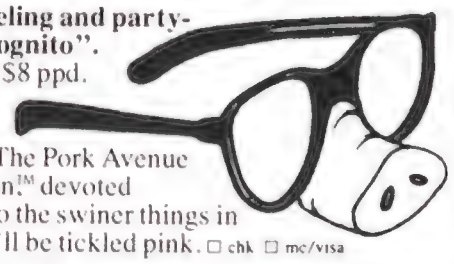

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Each hut is "Home: sleeping, eating, dreaming, reading, and staying warm."

recapturing this sentiment became the motive to build the second one."

To this and the 15 subsequent huts, Tacreiter began adding features she desired in her full-scale dream house: colored windows, rocking chairs, extra bookshelves. Each home birth required the same nine-month gestation, heavy labor throughout. But Tacreiter has found a steady source of wood to meet her exacting specifications—"small-grained, brown and grey, and weathered"—clapboards rescued from the country home she and Hankinson have remodeled and "fixed up like a 'possum hut inside."

And Tacreiter now has a regular clientele. She published 10,000 copies of *'Possum Huts* in response to demand for photographs of her homes at the craft fairs where they are displayed. All of Tacreiter's minihomes have been sold (but for three given to family members) at prices that have climbed from $400 to $2,000 since 1975. She's now completing her first commission; a fantasy castle-cottage fit for a queen: Titania, Queen of the Faeries.

If it's anything like these 'possum huts, it will be no small triumph.

Don Lessem
Naturalist and writer for *Worcester Magazine* in Massachusetts

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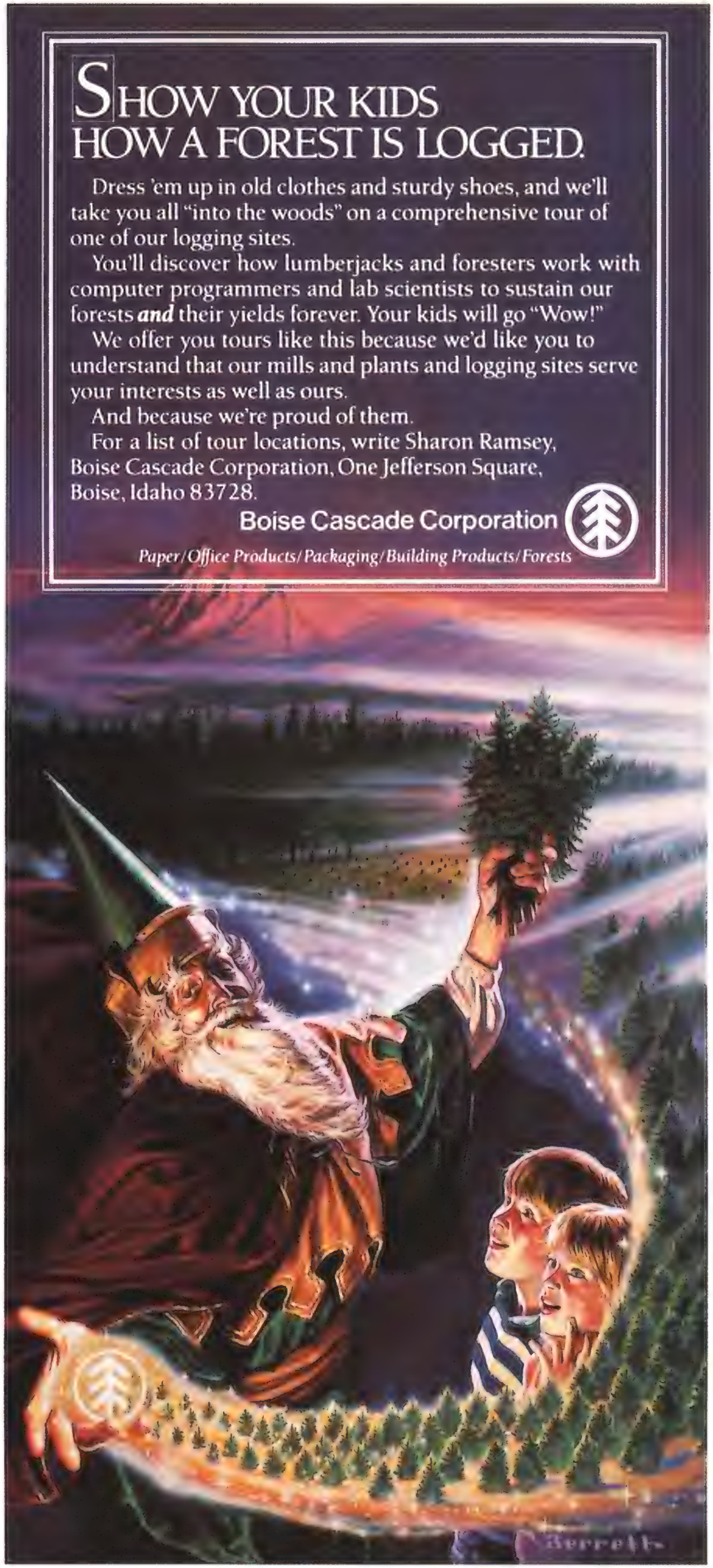

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Nine Innings
Daniel Okrent
Ticknor & Fields, $16.95

This ambitious and interesting new baseball book attempts to define the nature of the game via an intensive analysis of a single major-league contest: the Baltimore Orioles vs. the Milwaukee Brewers in Milwaukee's County Stadium on June 10, 1982. This was the fourth game of a series in which the Orioles had taken the first three, and were threatening to bury for good the Brewers' pennant pretensions. Yet in fact this was the season when the Milwaukee club won its divisional race (on the campaign's final day, beating Baltimore), prevailed over the California Angels in the American League playoffs, then lost an exciting seven-game World Series to the St. Louis Cardinals.

The game Okrent chose to examine was won by the Brewers 9-7, and offered plenty of action both early (four home runs) and late (Milwaukee's tie-breaking final two runs were scored in the last of the eighth). His approach is basically an inning-by-inning, play-by-play description of the game, with interpolated analyses of individual plays and relevant comments (some the length of little stories) on players, problems and strategies.

In frequent flashbacks the author analyzes the "team-building" and platooning tactics that made manager Earl Weaver's Orioles a team you had to *outsmart* as well as outplay, and the series of front-office maneuverings that comprised "the roots of the Milwaukee success in 1982"; for example, we come to know as much about Milwaukee club president Bud Selig and general manager Harry Dalton as we do about almost all of their team's star players.

Okrent watches what's happening along the sidelines and in the dugouts as well as on the field—and traces the careers outside the stadium of selected players, coaches and managers. A discussion of how teams steal opposing catchers' signs may be followed, several pages later, by an account of how different players deal with reporters' questions. We watch rival managers advance-guessing each others' moves, and learn of the lingering effects of the 1981 players' strike and "split season" and of how advocate Marvin Miller made the major-league Players' Association into an authentic union.

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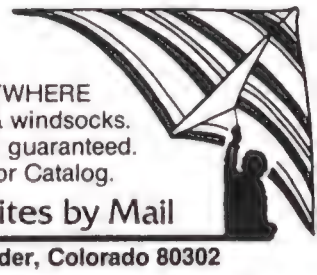

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The inherent drama of the game in progress keeps us reading, though some of Okrent's extended digressions are less interesting than others and despite a workmanlike prose style, often prone to grammatical awkwardnesses and outright blunders. There's also considerable repetition that should have been edited out: as players come up for successive at-bats, Okrent often repeats much of what he's previously said about them.

But his credentials as a baseball observer are splendidly displayed. Okrent has a fine eye for fielders' defensive positioning and hitters' idiosyncratic postures, and describes vividly such marvels as "the fluid series of crack-the-whip arcs that constituted [Milwaukee shortstop Robin Yount's] swing." He's especially sensitive to players' personalities (even if he gives excess space to the Brewers' side of the story), offering a telling contrast between Milwaukee's "golden hope" Paul Molitor and his burly beer-drinking teammate Gorman Thomas; examining the career ordeal of infielder-designated-hitter Roy Howell (never more than a part-timer, a little too valuable to be traded), and the defensive surliness of catcher Ted Simmons, an articulate man "determined not to be perceived as merely a jock."

Okrent manages to show how athletic competition *becomes* life for many of these men. And I think his leisurely contextual approach captures something of the way we experience baseball—as a syndrome of associations whereby virtually every unit of game action calls up in the fan's mind something remembered about the slugger hovering at bat, or the impossibly tall, loose-limbed-looking pitcher, or the shortstop dashing deep into the hole, then quickly pivoting. . . . *Nine Innings* isn't error-free, but fans will sense its essential rightness. It's a welcome companion to the welcome new season.

Bruce Allen
Literary critic

The Survival of Charles Darwin:
A Biography of a Man and an Idea
Ronald W. Clark
Random House, $19.95

The author of this new popular book on Charles Darwin has written widely on the Huxleys, J. B. S. Haldane, Albert Einstein and Bertrand Russell. Ronald Clark also has produced biographies of Sigmund Freud and Benjamin Franklin, among still others. Of his exploration of Darwin and evolution, it should be said at the start that the going requires staying power since the terrain is moderately difficult. The vista gained is worth the effort.

The general outline of Darwin's life will be familiar to many. The desultory undergraduate education (almost, it seems, a requirement for genius), the long voyage as a naturalist on the *Beagle*, subsequent decades of intellectual ferment and physical infirmity—mixed about half-and-half—at Downe in southeast England; and finally, under harried circumstances, the publication in 1859 of *The Origin of Species* and the revolution it both signaled and catalyzed, not only in biology and related sciences but in human affairs as well.

Equally familiar, no doubt, will be the well-worn theobiological notion, still current in mid-19th century, that species were immutable, looking pretty much the same as they did when the Creator made

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them on day one. Troubling, though, were the variations breeders could induce in domesticated plants and animals. So too were the remains of fossils, the living descendants of which could not be found on this Earth. At the same time, geologists were coming to the conviction that Earth itself was far older than suggested by Biblical exegesis. Something was ripe to burst.

Given the nagging species question and an expanding temporal context—given, too, those long walks in South America—Darwin realized that there had been time enough for species to change and that they did so through the mechanism of natural selection. Increasingly, evidence of its operation became to him everywhere visible—in the matrices of ancient rock as well as in the forms and lives of flora and fauna. Clearly, new species could arise just as established ones could vanish. In his theory of evolution, really a theory of nature, creation and extinction had become dynamically linked. And so the bubble burst.

What is less well known generally is how that revolution branched and played itself out; that is, how Darwin's magisterial theory led to the present shape of the biological sciences. What is therefore laudable about Clark's book, in addition to the detailed portrait of Darwin and his era, is that he charts the path evolution

The aging Darwin, "not so much ill as growing increasingly tired."

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has taken since its formulation right up to and including molecular biology. Indeed, his book might well have been entitled *The Evolution of Evolution.*

This portrait of the great man provides a lively recapitulation of the *Beagle* voyage through extensive quotes from Darwin's journal, revealing salient elements not only of the voyage itself but of Darwin's increasing sophistication as a naturalist and as a biological theorist.

Clark's treatment of Darwin's life at Downe is revealing. Having seen the world, he settled in and spent the rest of his life quietly trying to make sense of it, meanwhile tending to his family, his house and his writing and correspondence —to all appearances a staid, upper-middle-class Victorian existence. The glimpses Clark provides of the domestic Darwin—his garden puttering, his conscientious service as a village magistrate—prove a useful foil for the scientific Darwin. For, in contrast to the mercurial, even charismatic, Alfred Russel Wallace, his chief competitor, Darwin was patient, dogged and slow. Almost too slow, as became evident when Wallace independently came up with a virtually identical notion of natural selection, the central tenet of the theory Darwin had been incubating for close to 20 years. The famous rush for priority ensued, won by Darwin with the coaching of botanist J. D. Hooker and the redoubtable T. H. Huxley.

But if Clark is good with Darwin he is almost better in describing both the repercussions and the aftermath of the publication of *The Origin.* This is particularly true of his account of the bitter personal and professional feud that erupted between William Bateson and W. F. R. Weldon. Bateson was a classic naturalist while Weldon was both a biologist and a mathematician, one of the first practitioners of what would become biometrics, the statistical analysis of biological phenomena. The organic type versus the numbers type is the quickest way the conflict between them can be characterized, with the nature and mechanism of inheritance constituting the main bone of contention. Into this charged atmosphere suddenly loomed the previously overlooked work of Gregor Mendel, followed by the elegant fruit-fly experiments of T. H. Morgan in New York. The modern field of genetics was born and to a certain extent matured as a result, eventually leading to the description of the double helix by Watson and Crick in 1953.

The full story is obviously much more richly dense than that and, to his credit, Clark spins it with imagination, gusto and clarity.

Alfred Meyer
Washington writer and editor

A Proust Souvenir
William Howard Adams and Paul Nadar
Vendome Press, $17.95

The heart of this aptly named homage to Marcel Proust, a writer who more than any other celebrated the power of memory to resurrect and restore the past, is a collection of 57 photographs, some of Proust as a boy and young man, some of friends, lovers, his mother, his brother, various society people and celebrated artists, among them Sarah Bernhardt, Claude Debussy and Claude Monet. Most of the members of this varied group pro-

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vided him with details for characters that appear in his lifework and masterpiece, the lengthy *A La Recherche du temps perdu* or *Remembrance of Things Past.*

This handsome album, which is admirably introduced, commented and annotated by William Howard Adams, finds both its special appeal and its limits in having been derived entirely from the work of Paul Nadar. He was the son of the great pioneer photographer Félix Nadar, whose own portraits constitute an immortal visual record of many of the leading figures of the Second Empire, which ended with the defeat of Napoleon III in the Franco-Prussian War just preceding Proust's birth in 1871.

If Proust was the chronicler, in his infinitely detailed novel, of upper-class life during the age that followed, the so-called Belle Epoque, Paul Nadar was its photographer. Adams, who acknowledges his indebtedness to Proust's biographer George Painter, writes: "As we read the extraordinary roster of names that figured in Nadar's appointment schedule and discover their Proustian connections, it is as if the writer himself had conspired with the photographer . . . to record the faces of his world so that we can understand the raw material from which he drew inspiration for the great novel."

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Mme Adrien Proust served as model for Swann's mother, grandmother.

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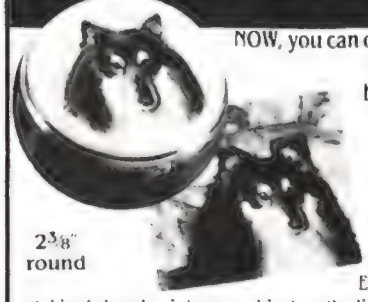

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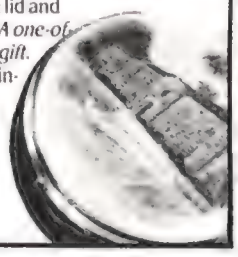

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wife) Odette de Crécy; Gilberte Swann, their daughter and the early love of the first-person hero; Albertine, his later love; the depraved and tragic Baron de Charlus; the society hostess Madame Verdurin; and the writer Bergotte. Although extensive, the list of originals is incomplete, for it was not Nadar's purpose to make a definitive census of Proust's sources.

As a consequence, certain characters —who play important roles in the novel— are not represented at all, while others— since it was Proust's practice to draw from several real persons in composing an imaginary one—are not represented fully. Still, despite certain regrettable absences, the collection has a coherence and a unity of effect that justify Adams' decision to limit himself to Nadar's work.

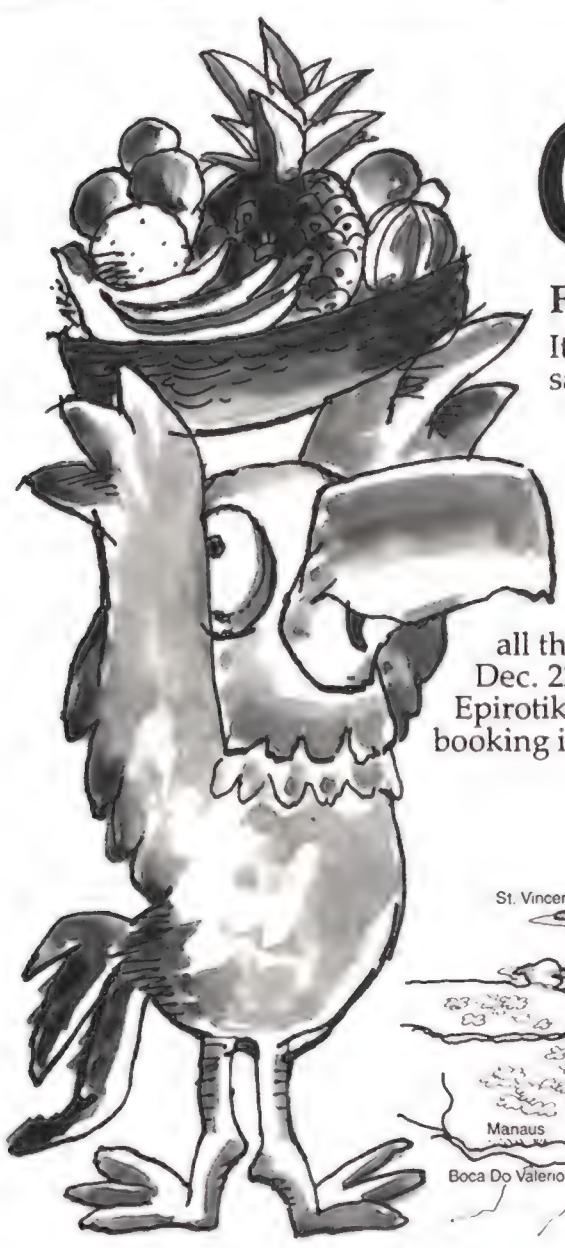
Perusing this collection, lovers of Proust's own work will gain above all else an awareness of the immense distance that stretches between observed reality, which these photographs represent (apart from their own considerable artistic and historical value), and the vastly different mental images that result from the writer's imagination working on the reader's. The question of the relationship between Proust's text and visual counterparts seems pertinent now that with the film *Swann in Love*, an episode from the book has been brought to the screen.

Marcel Proust, above, and brother Robert went to Nadar in 1880s for first portraits.

On the moral and spiritual level, prototypes and characters often do have a marked resemblance. For example, we have only to glance at the face of the author's mother, Madame Adrien Proust, to see in it the goodness that animates the hero's grandmother, for whom she was the inspiration, as she was for the fictional mother. At the other extreme, the vacuous yet arrogant face of Marquis Boni de Castellane seems to embody Proust's view of the negative qualities of his class.

Like William Sansom's *Proust and His World* (1973) and Mina Curtiss' *Other People's Letters* (1978), both of which in their different ways show the reality behind the fiction—and it is a shame they are out of print—this collection should gratify those who are already familiar with *Remembrance of Things Past*. Indeed, it may invite even those who are not to plunge into the wonderful labyrinth of a novel that is perhaps the greatest literary creation of our time.

Richard McDougall
Writer and literary critic



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Additional reading

Parrots (p. 58)

TRAFFIC (U.S.A.) (Trade Records Analysis of Flora and Fauna in Commerce), newsletter available from World Wildlife Fund-US, 1601 Connecticut Avenue N.W., Washington, D.C. 20009

"Parrot Pirates" by Edward R. Ricciuti, *Animal Kingdom* (The Zoological Society Magazine), April-May 1981

"Macaw Madness" by James C. Simmons, *National Wildlife*, June-July 1982

"Parrots: They're in, Legally or Illegally" by Fred Ferretti, *New York Times*, September 14, 1980

The Bird Business: A Study of the Commercial Cage Bird Trade by Greta Nilsson, Animal Welfare Institute (Washington, D.C.), 1981

Hadrian's Wall (p. 70)

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Handbook to the Roman Wall by J. Collingwood Bruce, edited by Charles M. Daniels, Harold Hill & Son (Newcastle upon Tyne), 1978

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The Roman Empire, 27 B.C.-A.D. 476: A Study in Survival by Chester G. Starr, Oxford, 1982

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Eye and Brain: The psychology of seeing by R. L. Gregory, Weidenfeld and Nicolson (London), 1977

"Insight into Sight" by David Van Essen, *Engineering and Science* (Caltech, September 1983)

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900 Jefferson Drive
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Magdalena Abakanowicz (p. 110)

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"Art of Anguish" by Todd Brewster, photography by Brian Lanker, *Life*, May 1984

"Magdalena Abakanowicz: The Force of Gravity" by Barbara Rose, *Vogue*, July 1984

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Boston Latin School (p. 122)

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John C. and Olive D. Campbell Papers, Manuscripts Department and Southern Historical Collection, University of North Carolina, Chapel Hill

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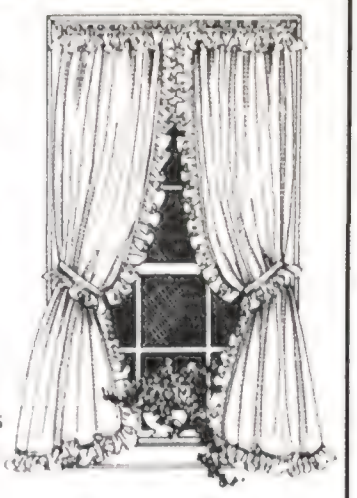
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Smithsonian highlights

Every year, spring brings a huge increase in the number of visitors to the Smithsonian museums on and around the Mall. For those who are coming, a free previsit information packet will help in planning ahead. You can obtain it by calling or writing the Visitor Information and Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560; (202) 357-2700 or TDD for hearing impaired (202) 357-1729. Allow about two weeks for delivery.

Special April exhibits and events

National Air and Space Museum
Edward Henry Heinemann and Clarence "Kelly" Johnson: Designers for the Jet Age (April 26-April 1986).
Wings and Things (April 27 and 28; 10 A.M.-3 P.M.) Annual aviation open house of the Paul E. Garber Facility in Suitland, Maryland, offers opportunities to talk with restorers at work.
The Milky Way: An Insider's View (April 6, 10 A.M.) Monthly sky lecture.

Cooper-Hewitt Museum (New York)
Old Master Prints from the Wallerstein Collection (through May 26).
Cut Paper (through May 12).
Chinese Gold and Silver from the T'ang Dynasty (through April 21).
The Four Continents (through May 19).

National Portrait Gallery
William Edward West, Kentucky Painter (April 12-June 16) Forty portraits.
A Truthful Likeness: Chester Harding and His Portraits (April 12-September 2).

National Museum of American Art
Creation and Renewal: Views of Cotopaxi by Frederic Edwin Church (through July 14).

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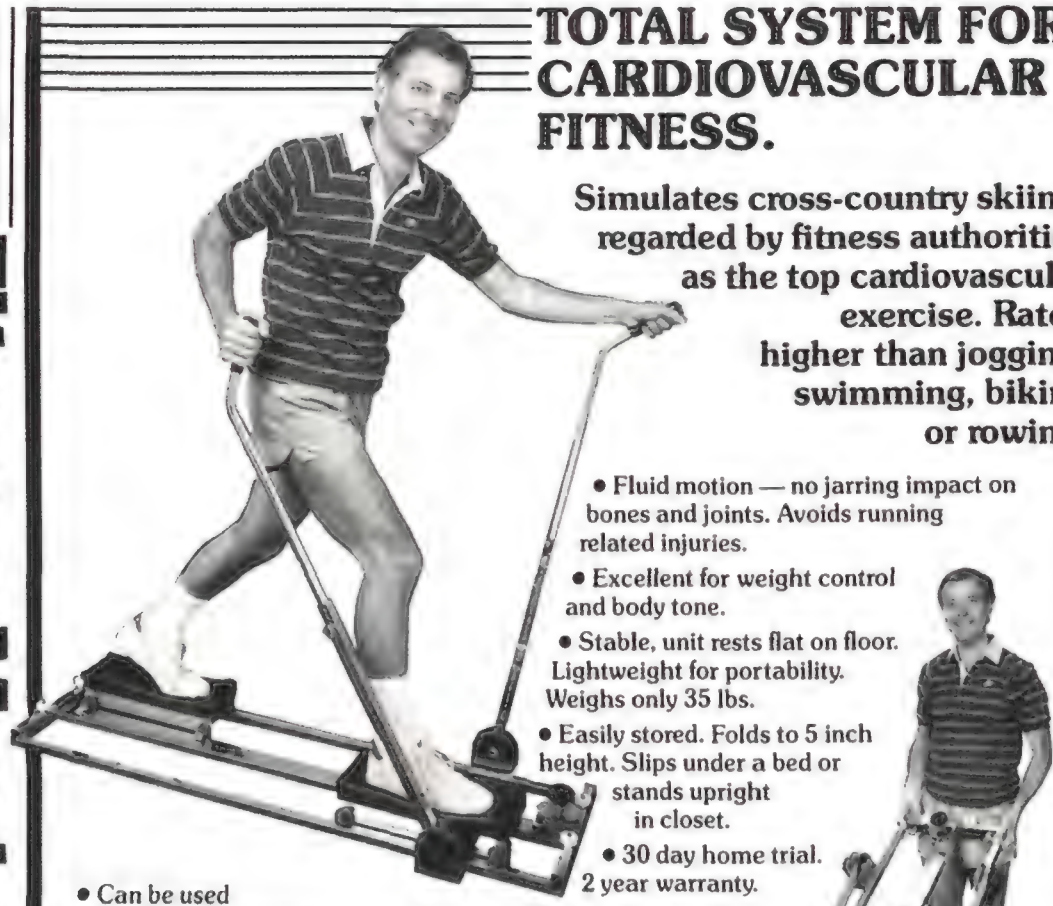

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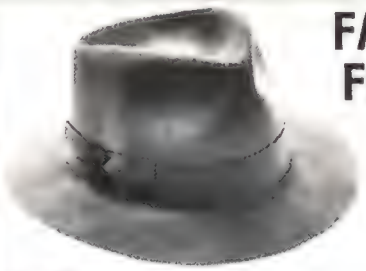

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National Museum of Natural History

Seventy-Five Years of the National Museum of Natural History (through May 26).

National Museum of African Art

African Masterpieces from the Musée de l'Homme (April 10-June 9) See *Highlights continued.*

Royal Curios, Cultural Artifacts and Museum Masterpieces: A History of African Art Collecting (April 10; 7 P.M.) Lecture by Bryna Freyer.

The Washington Craft Show

The Washington Craft Show, sponsored by the Women's Committee of the Smithsonian Associates, will be held at the Departmental Auditorium, 1301 Constitution Avenue N.W., Washington, D.C., on April 26-28. The hours will be 10 A.M. to 8:30 P.M. on Friday, 10 A.M. to 6 P.M. on Saturday and Sunday. Admission is $5 ($4 for Smithsonian Associates with coupon or membership ID, seniors over 65 and children under 12).

The show will be preceded by a fund-raising preview on April 25 from 6 P.M. to 8:30 P.M. By invitation, the tickets are $75 per person. Invitations may be obtained by writing to Women's Committee, c/o Mrs. Parker T. Hart, 4705 Berkeley Terrace N.W., Washington, D.C. 20007.

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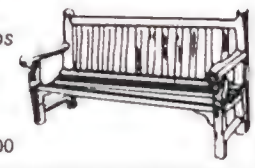

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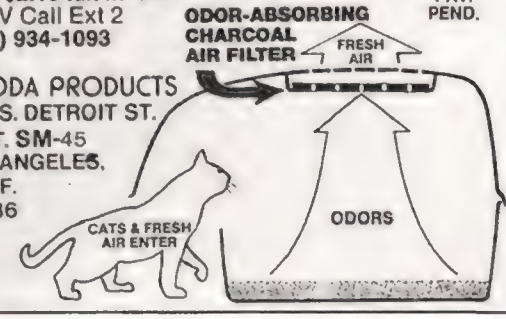

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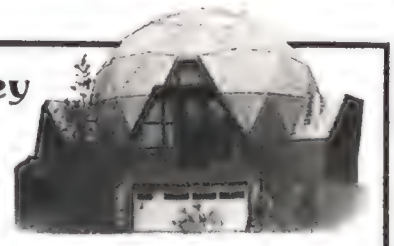

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Associates in Springfield, Massachusetts, and Portland, Maine, will have the opportunity to meet Smithsonian curators, scientists and musical scholars when the Lecture and Seminar Program visits these cities in April. The events in Springfield, April 24-30, feature concerts of Afro-American music, lectures on aviation history, and a special five-day seminar on creative writing. Highlights of the Portland series, April 24-29, are lectures on American art, concerts of American jazz music and a seminar on nature photography. A series of Smithsonian events will also be held in Mobile, Alabama, May 7-11. Lectures on archaeology and American art glass will be featured. Associates in these cities should have received invitations by this time. For further information, write: Lecture and Seminar Program, A&I 1190, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian on the air

Radio Smithsonian: features on this weekly half-hour series include the restoration of the 1903 Wright Flyer, the 75th anniversary celebration of the National Museum of Natural History, and a look at the misunderstood bobcat.
Smithsonian Galaxy: short radio features explore intriguing aspects of history, science, art and more.
Here at the Smithsonian. . . : two-minute TV features include the unknown paintings of 19th-century black artists and a medley of tunes from mechanical musical instruments.
Smithsonian World: "Heroes and the Test of Time," hour-long special on PBS television, April 24, 8 P.M.

To find out what stations in your area carry these radio and TV programs, write: Office of Telecommunications, MNH Room C222B, Washington, D.C. 20560.

Resident Associate events

To become a Resident Associate, or to find out about the many activities presented monthly, or for fee and ticket information, call 357-3030. Some April events are:
Caboodle by Plexus Mime Theatre (through April 20) Performances in Discovery Theater.
"Doc" Edgerton: Strobes and High-Speed Photography (April 11; 8 P.M.) Illus-

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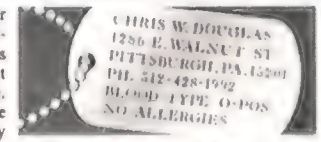

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Northwind, But Mild (April 14; 11 A.M.) Folk-jazz concert with choice of brunch before or after performance.
The Wedgwood Circle: Four Generations of A Family and Their Friends (April 15; 8 P.M.) Lecture by Hensleigh Wedgwood.
Concert Royal and the New York Baroque Dance Company Present a Tricentennial to Scarlatti, Handel and Bach (April 17; 8 P.M.).
The Washington Ballet (April 19; 8 P.M.) Program of small ensemble ballets, pas de quatres and pas de deux.
20th Century Consort (April 20; 5:30 P.M.) Program includes Luciano Berio's *Circles* and Klaus Adam's *String Quartet.*
RAP Salutes Jazz: From Harlem Stride to Avant-Garde (April 21; 7:30 P.M.) Three solo jazz pianists.
Smithsonian Chamber Players Present Italian Baroque Music of the 17th Century (April 23, 24; 8 P.M.).
Emerson String Quartet with Menahem Pressler (April 27; 7 P.M.).
Hurd Hatfield Reads "Whistler" (April 28; 8 P.M.).

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington. To sponsor a show in your community, write: SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some April exhibits:
New London, Connecticut (April 20-June 2) *Exploring Microspace,* Thames Science Center.
Tampa, Florida (April 6-July 21) *Building Brooklyn Bridge: The Engineering and Construction, 1867-1883,* Museum of Science and Industry.
Baton Rouge (April 6-May 5) *Edgar Chahine: La Vie Parisienne,* Louisiana Arts and Science Center.
Worcester, Massachusetts (April 13-May 17) *Images of Old Age in America,* University of Massachusetts Medical Center.
Wisconsin Rapids, Wisconsin (April 13-May 12) *The Magic of Neon,* McMillan Memorial Library.

Visiting members' benefits

The cordial welcome at the Associates' Reception Desk, 10 A.M. to 4 P.M. daily in the Smithsonian Institution Building, includes special printed materials in a reusable tote bag and details on dining in the Court and discounts in Smithsonian museum shops.

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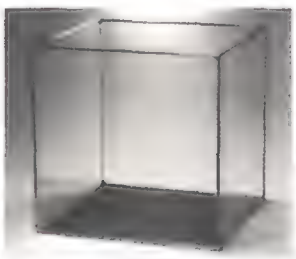

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Highlights continued

Masterpieces of African art

This spring, a world-renowned Paris museum shares 100 of its finest works with the Smithsonian

In 1830, King Louis Philippe of France established a new museum, the Trocadéro. It was needed to house the burgeoning collection of ethnographic objects, mostly from Africa, being brought back by merchants, adventurers and, often, missionaries. Some carried the pieces back because they seemed so unusual; others, particularly the missionaries, brought them to show how barbarous and devoid of spirituality these people were.

As time passed, however, an interesting thing happened. More and more people who encountered the artifacts saw in them an esthetic quality which, while unfamiliar to them, was intensely compelling. Finally, the Cubists and Surrealists, finding in the objects new sources of vitality and expression, declared that they were, indeed, "works of art."

It was then that the Trocadéro decided to seriously study this huge assemblage which had grown so anarchically—and then to expand it in a systematic way. In 1931, the first scientific expedition, led by Marcel Griaule, left for Africa.

In crossing the continent, the three-year Dakar-Djibouti expedition bought masks and other objects, documented the cultures, and left as friends. (Years later, when Griaule died, the Dogon people held funerary rites for him—something never before done for a white man.)

Today, the Musée de l'Homme, as it is now called, has one of the foremost African art collections in the world, and it has sent an extraordinary exhibition to the United States. From its thousands of objects, co-curators Susan Vogel of the new Center for African Art in New York City and Francine N'Diaye of the Musée de l'Homme have selected 100 of the rarest and most renowned pieces. Ninety percent of them have never been exhibited outside France. "African Masterpieces from the Musée de l'Homme," a feast for the eyes and the spirit, will be at the National Museum of African Art from April 10 through June 9.

Constance Bond

Gelede mask was used in western Yoruba performances to appease female power.

Kota reliquary guardian wears its basket "body."

Ivory horn, 16th century, was made in Sierra Leone for an African patron.

Reliquary from Gabon came to light in museum's 1943 inventory.

Seated figure makes this Baule divination vessel rare.

Mother and child from Cameroon probably commemorated royal birth.

HOW MANY MISSILES DOES AN EMPIRE NEED TO STRIKE BACK?

Thirty years after the arms race was launched, people want some answers. Will a lot of missiles keep the peace or start a war?

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Domestic Study Tours

Chesapeake Bay Cruise May 18-25: Enjoy fresh crabs and oysters aboard the elegant yacht *Nantucket Clipper*, while learning about the bay's history. Cruise to such charming 18th-century towns as Annapolis, St. Michaels and Williamsburg.

Chicago June 5-9: Walking tours and special programs to study the city's stunning architectural legacies.

Alaska June 15-25: Board the *Majestic Alaska Explorer* for a breathtaking cruise from Seattle to Ketchikan through Alaska's famed Inside Passage.

Grand Canyon July 5-15: Raft with expert boatmen through magnificent landscape. Camp beside the river, see Indian petroglyphs, learn about wildlife, history.

Vermont Sampler July 12-20: The peaceful beauty of Vermont sets the stage for a look at its history, culture and crafts.

Waterton-Glacier International Peace Park July 16-27 or August 13-24: Hike through spectacular alpine scenery with naturalists. Spend nights in remote, picturesque lodges.

Oregon July 19-28: Fresh sea air, colorful wild flowers, mountain vistas and historic lodges highlight this outdoor adventure.

Journey on the Green River July 19-29: Experience the thrill of white water and the beauty of Utah's magnificent Desolation and Gray Canyons.

Natural History in the Colorado Rockies July 28-August 3: Hike the majestic Pikes Peak area to examine local flora and fauna.

Middle Fork August 5-13: An unforgettable river trip on Idaho's Salmon River. Camp under the stars, see nature at its best.

Colorado Mining and Railroads August 9-17: Relive the days when steam locomotion opened the West and the gold rush brought Telluride, Durango and Ouray to life.

Crow Canyon Archaeology August 11-18: Get hands-on experience as you join archaeologists near Mesa Verde, Colorado, to participate in a dig at an ancient Indian site.

Delta Queen September 6-14: STEAMBOAT A-COMIN! Board the legendary paddle-wheel steamboat for a nostalgic voyage on the mighty Mississippi to Hannibal, Missouri, for the grand celebration of Mark Twain's 150th birthday.

Coming in September: New England Seaports, Arches and Canyonlands, Maine Natural History, and Indian Pueblos of the Southwest.

Washington "Anytime" Weekend: Discover your capital city in the Smithsonian style. As a membership benefit enjoy private tours, luxurious accommodations and much, much more. A perfect weekend getaway. Must reserve 10 days in advance.

Foreign Study Tours

People's Republic of China, 1985: Exclusive tours to a variety of destinations are led by a Sinologist and include intensive pretour briefing.

Countryside Tours from May through September: Choice of eight two-week residential programs in England, Austria, Switzerland or France. Unpack your bags, relax, meet with local people while enjoying lectures, field trips, museums.

Canals and Old Masters April 10-24: Art museums, historic tours and spring flowers highlight four days in Amsterdam. Then sail by riverboat to explore medieval ports.

Paris and Provinces April 20-May 5: Springtime in Paris! Six days with walking tours and special seminars at the Louvre, followed by your choice of travel to Provence or Burgundy to see the countryside.

Ecuador and the Galápagos Islands May 11-24: After visiting Quito and the Andean countryside, board the *Santa Cruz* for a study voyage to Darwin's famed islands.

Russia May 13-28: Leningrad, Moscow and Tallinn. See the Hermitage, Kremlin and other fabulous museums and palaces.

Irish Walk May 14-25 or September 18-29: Tour scenic villages, hike leisurely trails through serene country settings, stay overnight at castles and charming hotels.

Danube Cruise May 25-June 11: Explore magnificent castles, cathedrals and palaces on this historic route from Bucharest to Vienna via chartered ship.

Wild Highlands of Scotland May 30-June 17: Based in a castle, travel to scenic offshore islands, walk through moors and glens surrounded by gentle Scottish hills and green forests, meet with local people.

Seminar in Florence May 31-June 16: Study the Florentine Renaissance with scholars while living in a 15th-century villa.

Europe's Northern Waterways June 30-July 13: Aboard the *Argonaut*, cruise scenic rivers, tranquil canals and historic sea-lanes from England to Denmark.

Cambridge/Smithsonian Aerospace Studies July 11-28: Based at famous university in England, attend seminars on the development of modern aviation and astronomy.

Land of the Vikings July 21-August 4: Spend three days exploring historic Edinburgh, then embark for Norway's majestic fjords and Copenhagen on the *Illiria*.

Iberia and Provence August 12-26: Visit Santiago de Compostela and Carcassonne during a cruise on the elegant *Argonaut* to Portugal, Spain and France.

Setting the Stage for Shakespeare June 6-19 or 13-26: Savor the atmosphere of Chaucer and Malory. Visit towns, cathedrals and castles that set the stage for their literary works.

Trans-Siberia September 3-26: Cross Siberia on Train No. 1, the *Russia Express*. Depart for Outer Mongolia, Central Asia or Moscow and Leningrad.

Oxford Seminar September 13-28: Study with Oxford faculty, live in an academic setting, see historic English villages.

Coming in September: Special tours to Spain, Peru and Italy.

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n Washington

Smithsonian Seminars

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Aircraft Restoration Workshops with Smithsonian Craftsmen
May 19-23, 1985
The master artisans of the National Air and Space Museum share their specialized techniques at its Paul E. Garber Facility.

Fine Ceramics of the Ming and Qing Dynasties
June 2-7, 1985
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Studies at the Smithsonian
During one week, October 27-November 1, Smithsonian scholars will offer five exciting seminars, all focusing on the Institution's research and including specially arranged tours. New offerings will include:

Anthropology at the National Museum of Natural History
American Art in the Smithsonian Collections
Baroque Music Performed in the Division of Musical Instruments
Fossils of the Earth: Paleontology at the Smithsonian Institution
History of Aviation Presented by the National Air and Space Museum

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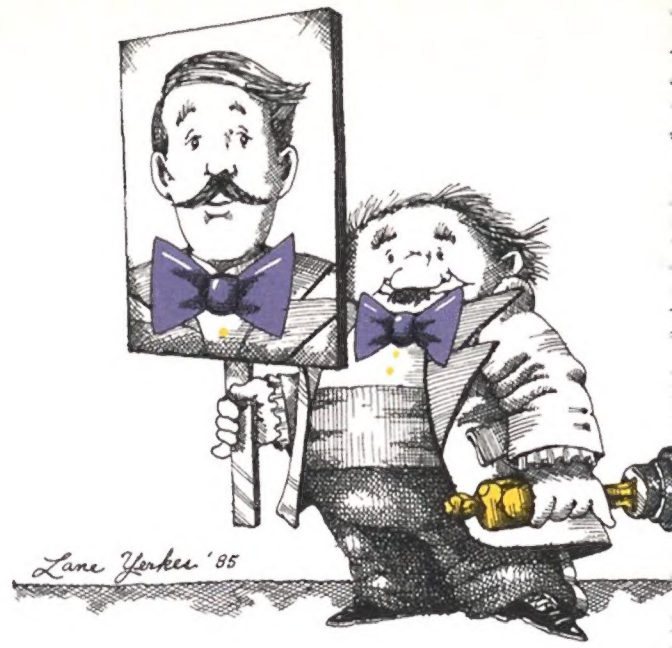
By Charles Champlin

A name by any other name would sell as sweet



I have this small but warming fantasy, in which it is Oscar night of some near-future year. Envelopes are being ripped open by the usual crowd of suspect actors, who are once again proving that ad-libbing is not among their notable skills.

And the winner for best actor is Bruce Boxleitner, and for best actress Nastassja Kinski; for best supporting performances Allen Goorwitz and Meryl Streep.

Nothing overly fantastical so far; the names have grown familiar, and the actors have all done good work. But in this half-dream of mine, ghostly figures in the audience shake their heads in shock and disbelief.

Jack Warner turns to his friendly rival Louis B. Mayer and says in a loud whisper, "You're tellin' me some agent lets his boy go out with a name like Bruce Boxleitner? BRUCE . . . BOXleitner? We had enough trouble with Bruce Cabot. And Streep, how is *that* for sounding sexy?"

"Yeah, Jack," Mayer says, "this new generation's got no respect for how names look on marquees."

If I pursue the dream, the legendary talent agent Henry Willson is in the audience too, remembering how he converted Roy Fitzgerald into Rock Hudson and Arthur Gelien into Tab Hunter.

Even in the old days studios were sometimes stuck with sports stars who had clunky names like Buster Crabbe or Johnny Weissmuller, too well known to change. But there really was a time when the changing of names was part of the fun of Hollywood and helpful to the make-believe that extended from the screen into the semiprivate lives of the stars themselves.

It was a sort of prehistoric Trivial Pursuit for all of us out there in fanland to know and tell that Joan Crawford was originally Lucille Le Sueur, that John Wayne played football at USC as Marion Morrison, and Loretta was actually Gretchen Young—before Hollywood's star-naming system got to them. Garbo was always Greta, but born Gustafsson, as the fan magazines could have told you.

Those particular before-and-after names are all of a generation, of course. Names are occasionally still changed to protect the unrememberable and unspellable, but seldom to conceal ethnic or foreign origins. Ramon Estevez became Martin Sheen, while his actor son goes by the name of Emilio Estevez.

One of the first to *refuse* a name change for ethnic reasons was World War II star John Hodiak (*Battleground, A Bell for Adano*). When Louis B. Mayer wanted to give him a Waspy new name, Hodiak replied "I look like a guy named Hodiak."

The problem of having a name that is already famously occupied can be a particular frustration, too. Seeing that there was no film future in being plain James Stewart, an English actor switched to Stewart Granger, and did fairly well, although he remains Jimmy to his friends, who are not confused.

The truth is that the preservation, or the resurrection, of real names says a good deal about the changing nature of Hollywood and the shifting (declining) role of the movies in society.

A Hollywood whose founding fathers were predominantly Jewish saw itself playing to an audience not only predominantly non-Jewish, but tinged with anti-Semitism. So the names were anglicized and made noncommittal. Emmanuel Goldenberg became Edward G. Robinson, thus enabling him to play Italian gangsters. And so it went.

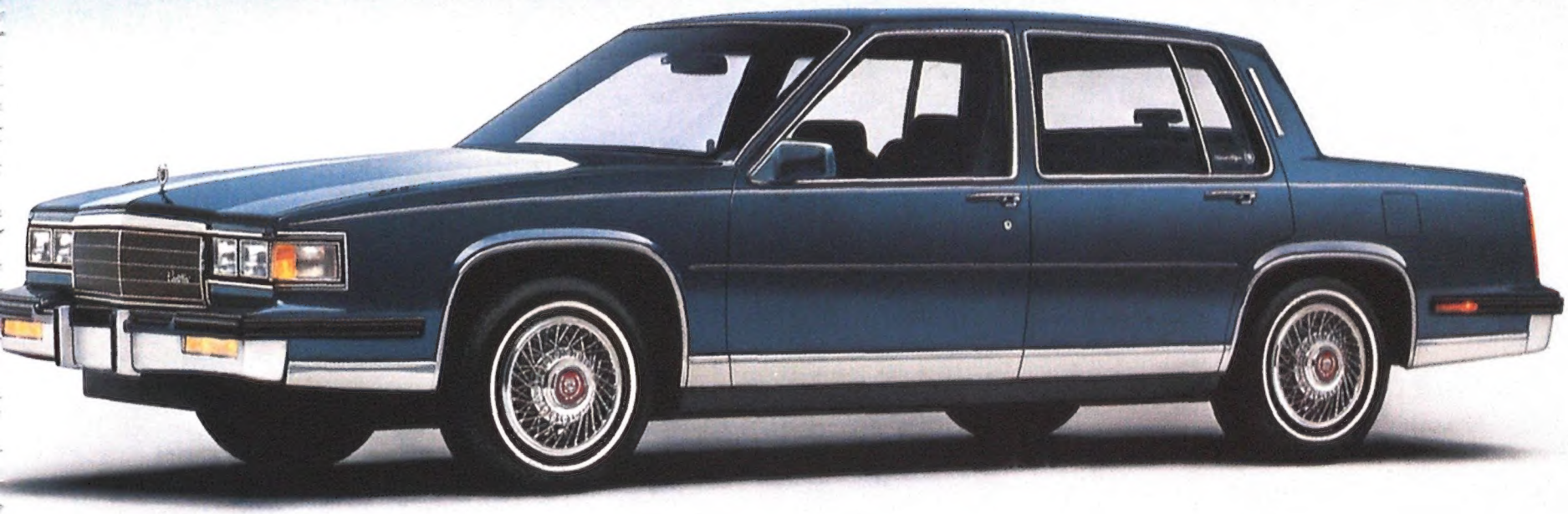
When you could start with a clean slate, or a blank birth certificate, so to speak, the sky was the limit. Sometimes, wonderfully, the new names echoed the onscreen casting. Who could imagine a slinkier seductress than a hot-eyed actress named Theda Bara? She had to be more exotic than somebody named Theodosia Goodman—and from Cincinnati at that. Roy Rogers isn't all that cowboy-heroic, but I've always thought it carried stronger reverberations than Leonard Slye.

By now, 40 years into the age of television, movie studios like Fox and Universal no longer have platoons of publicists dreaming up sleek, alliterative monikers, enchanting and highly improbable fake biographies and nonexistent romances for dozens of beautiful hopefuls a year.

Such frenetic creativity now attends the making and marketing of punk groups and other "three-chord" ephemera. If they're smart, actors, by the time they come to the notice of film and television, have figured out that it's the script, the acting and the face that count, in about that order. The name only has to be slightly rememberable, and these days it may well be that the less glamorous it is, the more easy to remember.

The movie audience is only a fraction of what it once was—between a quarter and a fifth of the glory days, by my reckoning—and it is now defined by age (young) not by ethnicity, class or any other variable. The worrying moguls are themselves long gone and one name will do as well as another.

It's all more sensible, but less fun. In my fantasy, Bruce Boxleitner thanks the Academy and then announces that he is changing his name to Rhett Boxleitner. In *her* acceptance speech, Meryl Streep says that if it's all right with all of us, she will henceforth be known as Meryl St. Amour. OK by me.



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